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SPECIAL ARTICLE.

THE RELATION OF YALE TO MEDICINE.[1]

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OF BALTIMORE.

ON this fourth Jubilee of Yale University, speaking, as I trust I may, in behalf of many hundreds of physicians who have received their liberal or professional education in this institution, I bring affectionate greetings to our Alma Mater, and offer our hearty congratulations on this happy anniversary. With all the sons of Yale we join in the prayer of President Stiles: "Peace be within thy walls, O Yale, and prosperity within thy palaces."

Yale is related to medicine most directly through her Medical Department, but also through all who have studied here and subsequently practised the art or cultivated the science of medicine. The Medical School, although the first department added to the College, was not established until over a hundred years after the foundation of the Collegiate School at Saybrook. From the beginning, however, graduates of the College are to be found in the ranks of medical practitioners, and any account of the relation of Yale to medicine would be most incomplete without some consideration of the alumni of the eighteenth century who were physicians. Their history makes a large part of the medical history of Connecticut during that century, but it is not limited to this State.

EIGHTEENTH CENTURY.

Doubtless the student of universal medical history, who, after tracing the wonderful development of medicine in the century of Harvey, Malpighi and Sydenham, is engaged in following medical progress through the eighteenth century, marked by such names as Boerhaave, Haller, Morgagni, and Hunter, would not turn aside long to note what the physicians of Connecticut or indeed of any part of America were doing at that time. Still the records of these early Yale physicians have the interest incident to the beginnings of things which have become important, and for us the special and sympathetic interest which belongs to the annals of family and country.

When the first physicians who had received their collegiate training at Yale appear upon the scene early in the eighteenth century, the state of medicine in this country had not advanced materially beyond the primitive condition of the early colonial days. We encounter, as in the early history of medicine everywhere, three classes of medical practitioners: the priest-physician, the regular physician educated and practising according to the recognized standards of the day, and the empiric or charlatan. What Cotton Mather called "the angelical conjunction" of the cure of the soul and of the body was to be found most frequently and in its best type in New England. Here the regular training of physicians was almost wholly by apprenticeship for three or four years to some practitioner of repute. As vividly portrayed by a Connecticut physician: "The candidate 'served his time,' as it was then called, which was divided between the books on the shelf, the skeleton in the closet, the pestle and pill-slab in the back room, roaming the forests and fields for roots and herbs, and following, astride of the colt he was breaking, the horse which was honored with the saddlebags."

Nor was this condition very materially changed during the eighteenth century by the founding of the Medical Departments of the College of Philadelphia (now the University of Pennsylvania) and of King's College (now Columbia) in the decade before the Revolution, and of those of Harvard in 1783 and of Dartmouth in 1797. During this century only two graduates of Yale College (John A. Graham, Y. 1768, and Winthrop Saltonstall, Y. 1793) had received a medical degree in course. The number of students from the New England colonies who resorted to the medical schools of Edinburgh, London, or Leyden was extremely small, much smaller than that from the Middle and Southern colonies.

With the exception of a law passed in New York in 1760 and a similar one in New Jersey in 1772, there was no effective legislative control of medical practice in any of the colonies. Anyone who chose could practise, and the root-doctors and Indian doctors of Connecticut had their counterparts elsewhere. More from the sparseness and poverty of the population than from the absence of disease the remuneration from medical practice was so small that the physician often added some other occupation, most frequently agriculture, to the practice of his profession.

There were no hospitals, except pock-houses, and practically no medical organization. There was little opportunity for intercourse and interchange of views between physicians in different parts of the country, so that local peculiarities of practice were more common then than now. The only text-books were European, the most authoritative on medical practice being the works of Sydenham and of Boerhaave, later also of van Swieten, Mead, Huxham, and Cullen. There was no American medical journal until near the end of the eighteenth century.

With two or three exceptions the few original medical publications, mostly short pamphlets, by American physicians before the Revolution contained scarcely any personal observations of importance, so that the names of these physicians are remembered to-day by their reputation among their contemporaries and their influence upon their successors rather than by any actual contributions to medical knowledge.

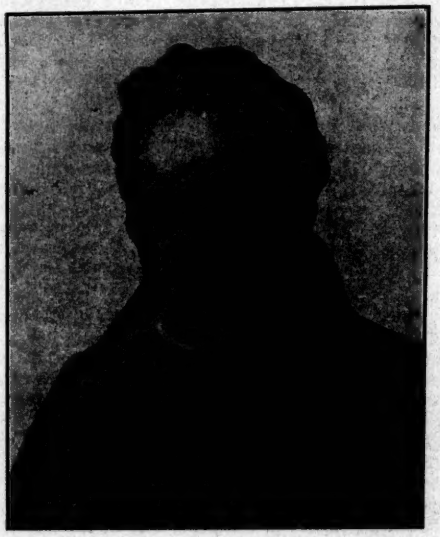
After this necessarily brief statement concerning some of the conditions of medical practice in the New England colonies, we are better prepared to appreciate the position and work of those graduates of Yale College in the eighteenth century who became physicians.

The course of studies at the College was planned rather for the preliminary training of ministers than of doctors, but it furnished a classical education, which was then more necessary for the study of medical books than it is to-day. There seems to have been at least some interest in the College in medical knowledge, if one may judge from the titles of some of the early theses and from the possession by the College of a human skeleton and "paintings of the human body skin'd," as they are inventoried. President Stiles occasionally delivered a lecture on medicine, and in his recently published "Literary Diary" he gives an interesting outline of one of these lectures, the main headings being I. Anatomy, II. Pathology, and III. The Methodus me-

[1] An Address delivered at the Two Hundredth Anniversary of the Founding of Yale College.

dendi (one of the subheadings here being "Efficacious Medicines but few")—sufficiently comprehensive, it may be said, for a single lecture even in those days. The success attained by the Yale physicians of the eighteenth century indicates that the College then, as ever since, supplied its graduates with a training of mind and character adapted to the circumstances of time and place, and fitting them for the work of life in any field.

Mainly by the aid of Professor Dexter's two invaluable volumes of "Biographical Sketches of the Graduates of Yale College," covering the period from 1701 to 1763, and a kind personal communication relating to the



NATHAN SMITH, M.D.,

PROFESSOR OF THEORY AND PRACTICE OF PHYSIC, OF SURGERY AND OF OBSTETRICS, 1813-1829.

remaining classes, I have been able to determine that there were at least 224 Yale graduates in course of the eighteenth century who practised medicine. This figure, which is certainly somewhat below the correct one, is 9.7 per cent. of the entire number of bachelors of arts for the same period—a percentage about the same as the corresponding one for the nineteenth century. Of the seven graduates in arts from the College in the first two decades of the eighteenth century who became medical practitioners, all, with one exception, were also clergymen, and of the seventy-two physicians graduated in arts in the first half of the century nearly one-fourth were clerical, whereas after this there are only a very few names of clerical physicians.

All who are familiar with the early colonial history of New England know what an interesting class the clerical physicians were. Not a few of them were educated, skilful physicians, who ranked among the leading practitioners and teachers of medicine in their day, while others were, on the medical side, scarcely more than "comforters of the sick," as they were sometimes called, rather than active practitioners. One of the earliest and most celebrated of this class of physicians was the Rev. Thomas Thacher (1620-1678) of Boston, the direct ancestor of our own honored and beloved Latin professor of the same name. His name is preserved in medical annals as that of the author of the first solely medical publication in America, a broadside folio which appeared in Boston in 1677 and is entitled: "A brief rule to guide the common people of New England how to order themselves and theirs in the small pocks or measles."

But of all those who combined the offices of clergyman and physician, not one, from the foundation of the American colonies, attained so high distinction as a physician as Jared Eliot of the Class of 1706, who was the first graduate of Yale College to enter upon the practice of medicine. His name is preceded in the triennial catalogue by that of Phineas Fiske of the Class of 1704, who was eminent both as a divine and as a physician, but whose shorter professional career did not begin until five or six years after that of Eliot.

The name of Jared Eliot is a worthy one to lead the long line of over 2,300 physicians who have received their liberal or professional education at Yale College. The grandson of the Rev. John Eliot, the Apostle to the Indians, he spent his long, two-fold professional life of fifty-four years in the town of Killingworth (now Clinton) in this State, where he succeeded in the ministerial office his teacher, Abraham Pierson, the first rector of this College. Of fine bodily presence and engaging personality, for many years an influential trustee of Yale College, the library fund of which was started through his bequest, the friend and correspondent of Benjamin Franklin, Bishop (then Dean) Berke-

REV. JARED ELIOT, M.A., (Harv.),

FELLOW OF CORPORATION OF YALE COLLEGE, 1730-1763. THE FIRST GRADUATE OF YALE COLLEGE WHO BECAME A PHYSICIAN. BORN 1685, GRADUATED 1706, DIED 1763.

ley, and other learned men, a fellow, it is said, of the Royal Society, and recipient of a gold medal from the London Society of Arts, accounted in his day an excellent botanist, chemist and practical and scientific agriculturist, Eliot, as is stated by Dr. James Thacher in his American Medical Biography (1828), "was unquestionably the first physician of his day in Connecticut," and in chronic complaints "he appears to have been more extensively consulted than any other physician in New England, frequently visiting every county of Connecticut, and being often called in Boston and Newport." It is also said of him that "for forty successive years

he never omitted preaching either at home or abroad, on the Lord's day." With evidences of such manifold activity one is prepared to accept the statement in his funeral sermon: "Perhaps no man slept so little in his day, and did so much in so great variety."

It is customary to speak of Jared Eliot as "the father of regular medical practice in Connecticut," and when one considers the number of physicians who were trained under him, and that among these were such leaders of the profession and successful teachers of medicine as his son-in-law and successor in practice, Benjamin Gale (Yale 1733), and Dr. Jared Potter (Yale 1760), the title seems justly conferred.

Among other clergymen noted in their day as medical practitioners may be mentioned Eliot's classmate, Jonathan Dickinson, the first President of Princeton College, whose paper published in 1740 entitled "Observations on that terrible disease, vulgarly called the throat distemper" is the first medical publication by a graduate of Yale College, and the third on diphtheria by an American; Benjamin Doolittle, Yale 1716, of Northfield, Mass., "well skilled in two important arts," according to his epitaph; Timothy Collins, of the Class of 1718, traditions of whose practice are still current in Litchfield County; Isaac Browne, of the Class of 1729, an early member of the New Jersey Medical Society, the first State Society organized in this country; Moses Bartlett, 1730, the pupil and son-in-law of Phineas Fiske, described on his monument as "a sound and faithful divine, a Physician of Soul and Body," and the father of a son of the same name, graduated in 1763, who was one of the last of the clerical physicians; Dr. John Darbe, of the Class of 1748, who received the honorary degree of M.D. from Dartmouth in 1782, and is the first graduate of Yale College to become Doctor of Medicine; and Manasseh Cutler, Yale 1765, skilled in medicine as well as in many other arts.

The first non-clerical physician in the list of graduates is Jeremiah Miller of the Class of 1709, who settled in New London. He seems, however, to have been more engrossed with other occupations than with medicine, so that Professor Dexter names John Griswold of the Class of 1721, of Norwich, Conn., as "the earliest graduate of the College who devoted himself exclusively to the profession of medicine."

Among the two hundred and more eighteenth century graduates of Yale whose principal or sole professional occupation was medicine are to be found the names of many physicians whose memories are preserved, and of whose useful lives and faithful service in their calling this College may justly be proud. Some were among the most influential and widely known medical men of their time and country. Such were Alexander Wolcott (1731), whose scholarly attainments in medicine are attested by the interesting collection of his books still preserved; Benjamin Gale (1733), one of the few pre-Revolutionary American physicians who have left published records of valuable medical observations; Leverett Hubbard (1744), corporator and first president both of the New Haven County Medical Society and of the Connecticut Medical Society, for many years the recognized head of the profession in this city and county; Eneas Munson (1753), successful, able and learned, one of the longest-lived and most remarkable physicians of his day, the first name in the medical faculty of the Yale Medical Institution; Jared Potter (1760), described by Dr. Bronson as "the most celebrated and popular physician in this State" in the first decade of the nineteenth century; Mason Fitch Cogswell (1780), one of the "Hartford wits," before the arrival of Nathan Smith the most distinguished surgeon in this State, whose name has a permanent place in the history of surgery; Eli Todd (1787), the first superintendent of the Retreat for the Insane at Hartford, who is honored by humanitarians and physicians alike as "the first in this country to introduce the more humane methods of care and treatment of the insane;" John Stearns (1789), Professor of Medical Theory and Practice in the College of Physicians and Surgeons, Western District of New York, President of the New York State Medical Society, who has the credit of first calling the attention of the medical profession to the use of ergot in obstetrics, and Thomas Miner (1796), whose ingenious and erudite essays on fevers and other medical subjects, written partly in conjunction with Dr. Tully, attracted wide attention and much comment both in this country and Europe. To those familiar with this period of American medical history, particularly in Connecticut, other names will occur which might with equal propriety be mentioned, did time permit.

Some who belonged to the medical profession are better known as holders of high public office and for

ENEAS MUNSON, M.D.,
PROFESSOR OF MATERIA MEDICA AND BOTANY, 1813-1826.

their services to their country than as physicians. Of the five medical signers of the Declaration of Independence, two were graduates of Yale, both in the Class of 1747—Oliver Wolcott, Governor of Connecticut, who studied medicine with his brother Alexander, already mentioned, and practised for a short time in Goshen in this State, and Lyman Hall, the first Governor of the independent State of Georgia, where he followed his profession with marked success. Nathan Brownson of the Class of 1761, who was Governor of Georgia, a member of the Provincial Congress and of the Continental Congress, and the holder of other high public offices, was likewise a practising physician and was appointed by Congress Deputy Purveyor of Hospitals and later to the charge of the Southern Hospitfals in the Revolutionary War.

The importance of the services of Yale graduates as surgeons and surgeon's mates in the French and Indian War and the Revolutionary War is not to be measured only by the passing mention which I find it possible to give to them here. I have found the names of ten graduates who served in a surgical capacity in the former war, headed by the doughty clerical physician, Timothy Collins (1718), the first Yale army surgeon.

In 1776 the General Assembly of Connecticut appointed a committee of eighteen of the leading physicians of the State to examine candidates for the positions of surgeons and surgeon's mates in the Continental Army, and some idea of the standing of Yale graduates then in medical practice in Connecticut may be gained by the facts that this Committee was headed by Alexander Wolcott and contained ten graduates of the College.

The earliest Yale graduate who held a commission in the American Revolution was a physician, Joshua Babcock of the Class of 1724, Major General of the Rhode Island militia. He had walked the hospitals in London in 1730, being the first graduate of the College to study medicine in Europe, and for nearly twenty-five years was an active practitioner in Rhode Island. Mr. Henry P. Johnston's book, "Yale and Her Honor Roll in the American Revolution," gives the records of twenty-three graduates who served as surgeons or surgeon's mates in this war, and of six other physicians who were officers in the army.

The first bestowal of the degree of Doctor of Medicine in America was by Yale College in 1723, when Dr. Daniel Turner, a well-known London physician and voluminous medical writer received the honorary degree. The first American medical degree in course was given by the College of Philadelphia, now the University of Pennsylvania, in 1768. The first graduate of Yale College to receive a medical degree in course was John Augustus Graham of the Class of 1768, who was graduated Bachelor of Medicine from Columbia in 1772, and the first to be admitted to the Doctorate of Medicine in course was Winthrop Saltonstall of the Class of 1793, M.D. Columbia, 1796.

There are certain directions in which Yale graduates during the eighteenth century especially contributed to the improvement of medical conditions in this country, an improvement everywhere slow and well marked only after the Revolution.

The Yale physicians of the eighteenth century, with a few not very important exceptions, which I have mentioned in a note,[1] were trained at home and were thrown in unusual degree upon the results of their own experience. While in the main their practice is not known to have differed from that which prevailed at the time, there is evidence of some local peculiarities. There developed early in Connecticut that special interest in the indigenous materia medica, which, transmitted in direct succession from Jared Eliot, through Benjamin Gale, Jared Potter, and Eneas Munson, became a distinguishing characteristic of Eli Ives and William Tully, the professors of materia medica and therapeutics in the Yale Medical Institution in its early years. This contributed to a less violent system of treatment of diseases than was customary in those days. Even in early colonial days a mild treatment of fevers prevailed in New Haven, according to Hubbard, who, in writing of this town in his History of New England, recorded that: "The gentle conductitious aiding of nature hath been found better than sudden and violent means of purgation or otherwise; and blood-letting, though much used in Europe for fevers, especially in the hotter countries, is found deadly in this fever, even almost without exception." In all probability the unusual success achieved by Benjamin Gale and certain other Connecticut physicians in the inoculation and treatment of small pox is to be attributed to the mild, cooling and open treatment which they adopted rather than to the preliminary mercurial treatment to which they ascribed it. These tendencies, for they were only such, did not find their full expression, however, until the appearance of Nathan Smith's work on Typhous (typhoid) Fever in the next century.

Connecticut physicians were pioneers in the work of organization of the medical profession, and in this work graduates of Yale were prominent. The oldest existing medical society in this country is the still active and flourishing Litchfield County Medical Society, founded in 1765 and preceded only by two short-lived voluntary organizations, one in Boston and the other in New York.

The first organized effort on the part of the profession to secure effective legal regulation of medical practice in the colonies was in 1763 when physicians of Norwich, Conn., petitioned the General Court for an act of incorporation, which was, however, not granted. The name of Elisha Tracy of the Class of 1738 appears among the signers of this interesting memorial. This first unsuccessful attempt was the beginning of a series of efforts which, largely through the initiative of the Medical Society of New Haven County, organized in 1784, resulted in the incorporation of the Connecticut Medical Society in 1792. In the meantime State medical societies had been formed in New Jersey (organized in 1766, incorporated in 1790), Massachusetts (1781), Delaware (1789), and New Hampshire (1791).

The charter of the Connecticut Medical Society is, in most respects, an admirable instrument, and, as regards the organization of State medical societies, historically almost as interesting as the famous Connecticut constitution of 1639. It embodies in a simple and practical fashion democratic and federative principles of organization and government resembling those adopted by the Commonwealth, and remains to this day a model for similar societies in other States. Of those concerned in the establishment of this society graduates of Yale were the most active and influential, and they composed over one-third of the charter members. The first president was Dr. Leverett Hubbard (Y. 1744), and upon his death Dr. Eneas Munson (Y. 1753) was chosen his successor and held the office for seven years.

The most noteworthy contribution to medical literature before the Revolution by a graduate of Yale was Benjamin Gale's (Y. 1733) Historical Memoirs Relating to the Practice of Inoculation for the Small Pox, in the British-American Provinces, Particularly in New England, published in 1675 in the Philosophical Transactions of London. This creditable and historically interesting paper attracted attention both here and abroad, chiefly on account of its advocacy of the mercurial treatment before inoculation. It may be here mentioned that one of the most valuable of the Yale bicentennial publications, the Literary Diary of President Ezra Stiles, edited by Professor Dexter, contains some interesting historical matter upon this subject of mercurial inoculation, as indeed it does upon a number of other subjects of medical interest.

After the War of Independence we find in American medical writings greater productiveness and originality than before, attributable largely to the increased medical and surgical experience gained during the war and to the higher degree of self-reliance engendered by the political conditions.

The first original separate medical work in this country after the close of the Revolutionary War was the volume published in New Haven in 1788 entitled "Cases and Observations by the Medical Society of New Haven County in the State of Connecticut." This publication, which contains twenty-six papers reporting cases of disease and autopsies, is an event of importance in American medical bibliography, not so much on account of the intrinsic value of the communications, although several are interesting, but because, in evidence of the

[1] The notes accompanying this address are omitted from this publication.

newly awakened medical life of the young republic, there is collected here for the first time a series of independent, original observations and studies by different American physicians. Nothing of the kind had appeared before in this country. One-third of the contributors to this volume are graduates of Yale.

Nine years later, in 1797, was started the first American medical journal, *The Medical Repository*, published in New York, and its projector was the talented and scholarly Elihu Hubbard Smith of the Class of 1786, with whom were associated Dr. Samuel L. Mitchell and Dr. Edward Miller. Dr. Smith, the father of American medical journalism, died much lamented the following year. Although so young, he was physician to the New York Hospital, the editor of several works, and a contributor to literary periodicals as well as to his own journal, in which his scholarly papers on the plague of Athens and the plague of Syracuse can still be read with pleasure and profit. The establishment of *The Medical Repository*, which was continued until 1824, was of great service in promulgating medical knowledge and stimulating medical thought and writing in this country at the close of the eighteenth and in the early years of the nineteenth centuries.

The graduate of Yale, however, whose published contributions in the eighteenth century are of the greatest permanent value to medicine was not a physician, but was that useful and versatile man, Noah Webster, of the Class of 1778. Noah Webster is the first epidemiologist which this country has produced. In 1796 he published A Collection of Papers on the Subject of Bilious Fevers, Prevalent in the United States for a Few Years Past, and in 1799 appeared in two volumes a work, well known to all students of epidemiology, entitled A Brief History of Epidemic and Pestilential Diseases, which is of unusual interest, and on account of its records and observations of epidemic diseases in this country has an enduring value. There are scattered papers by him on various medical subjects, and one of these buried in *The Medical Repository* (Second Hexade, Vol. II.) should be rescued from forgetfulness. In this critique of Erasmus Darwin's theory of fever Noah Webster gives a well-reasoned, clear and definite presentation of that modern theory associated with Traube's name, which explains febrile elevation of temperature by the retention of heat within the body.

NINETEENTH CENTURY.

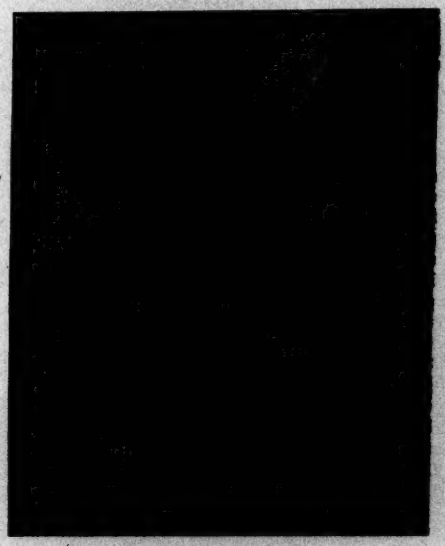
With the turning of the century Yale College, under the guidance of the first President Dwight, passed not only in name but also in spirit from the eighteenth to the nineteenth century. It was transformed from a local to a national institution, and it entered upon a new era of expansion in which seeds were planted destined in the natural course of development to grow into the spreading tree of a University. The first fruit of this new University idea was the establishment of the Medical Department, some account of which will now engage our attention.

The need at that time of a medical school in this place is apparent from the fact that only eight or nine graduates of the College before the foundation of the Medical Department in 1810 had received a medical degree in course, although a much larger number had spent a year in study at a medical school.

A part of the plan proposed in 1777 by a Committee of the General Assembly to enlarge Yale College, provided a Board of Civilians was added to the Corporation, included the establishment of professorships of medicine and of law. In the same year Dr. Stiles, before his entrance upon the duties of the presidency to which he had been elected, "drafted a plan of an University, particularly describing the Law and Medical Lectures," to be laid before the Committee of the General Assembly. These negotiations were at the time unsuccessful, and when at last in 1792 the closer union between the State and the College was effected, these early proposals had dropped out of sight.

In two respects the circumstances attending the establishment of the Yale Medical Department are of peculiar interest. The initiative came from within the College and not from without, and the form of union between the College and the Connecticut Medical Society is something unique in the history of medical schools.

The idea of founding a Medical Department connected with the College unquestionably originated with President Dwight and was a part of his plan for extending the scope and usefulness of the institution. This broad-minded man was, as is well known, much interested in natural science, and he considered in his



ELI IVES, M.D.,

ADJUNCT PROFESSOR OF MATERIA MEDICA AND BOTANY, 1813-1820; LECTURER ON DISEASES OF CHILDREN, 1820-1829; PROFESSOR OF THEORY AND PRACTICE OF MEDICINE, 1829-1852; EMERITUS, 1853-1861.

writings several matters of medical interest. One of the letters in his "Travels in New England and New York" contains an argument, really remarkable in the light of our present knowledge, in support of his conclusion that malaria is caused by minute living organisms.

It is clear from several passages in the autobiographical reminiscences published in Professor Fisher's "Life of Benjamin Silliman" that at the time of Professor Silliman's appointment to the chair of Chemistry and Natural History in 1802, a Medical Department was definitely contemplated, and that his appointment was regarded as an important step toward that end. The plan had from this time the hearty sympathy and active support of Professor Silliman. "Expecting," as he says, "from the first to be ultimately connected with a medical school in Yale College," he attended both in Philadelphia and in Edinburgh, where he had gone mainly for chemical study, courses of lectures upon anatomy,

materia medica, botany, and theory and practice of medicine, coming under the influence of such famous medical teachers as Wistar and Barton in the former city and James Gregory and John Barclay in the latter.

For centuries the medical departments of universities were the home of all that there was of chemistry and of other branches of natural and physical science, and it is significant that the Medical Department of this University came into being at the time when Benjamin Silliman had made New Haven the most important center for scientific work and influence in this country. It can hardly be an accidental coincidence that among the graduates of Yale College in the early years of Professor Silliman's teaching are found such men as William Tully, Alexander H. Stevens, who represented medicine at the one hundredth and fiftieth anniversary of this University, Jonathan Knight, Edward Delafield, John Wagner, Samuel H. Dickson, and George McClellan, who became physicians and surgeons of national and international fame.

In 1806 the Corporation of the College passed a resolution for establishing a Medical Professorship, and the Rev. Dr. Nathan Strong of Hartford, who introduced the resolution, and Professor Silliman were appointed a committee to examine and report, and to devise means for effecting the object.

It is to be emphasized that the Medical Department is the direct offspring of Yale College, and was not started, as nearly every other medical school in this country has been, by a group of outside physicians who have subsequently sought connection with a college. Even if there were no other claims, this origin should entitle the Yale Medical School for all time to the fostering care and support of its parent.

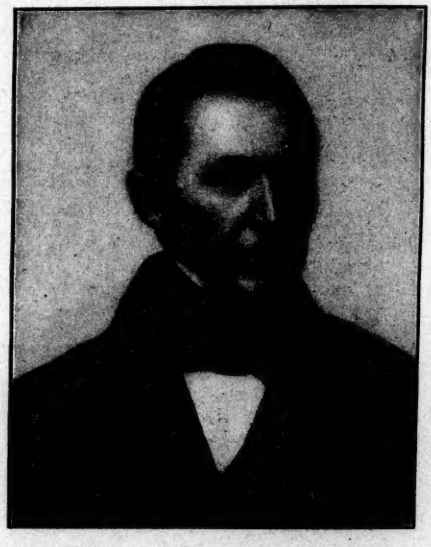
In order to understand the occasion for the negotiations which now ensued between the Corporation of the College and the Connecticut Medical Society, it is to be borne in mind that this Society was possessed, through its charter of 1792, of unusual prerogatives which gave it control of medical education in this State. It was not only an examining and licensing body, which was proper, but also a degree conferring body, which was decidedly improper and a usurpation of a function which should belong only to a college or university. From the beginning the Society had actively exercised all of these functions, and had furthermore made several regulations, which it was empowered to do, regarding medical education.

It was evidently necessary for the College to come to some sort of understanding with the Medical Society, and to induce it, if possible, to relinquish some of its chartered privileges.

It is not necessary here to enter into the details of these negotiations between the College Corporation and the Medical Society, which extended over three years, especially as these have been fully set forth in a readily accessible paper by Dr. E. K. Hunt, a generous benefactor of the Medical School. Suffice it to say that concessions were made on both sides, and that, largely through the efforts of President Dwight and Professor Silliman, representing the College, and of Dr. Eli Ives, representing the Medical Society, a satisfactory and amicable arrangement was reached, apparently without a great deal of friction, and was embodied in "Articles of Union," which constitute the Act creating "The Medical Institution of Yale College," passed by the General Assembly in 1810 at the October session.

This Act fixed the number of professors at four ("to include a complete circle of medical science"), the price of the ticket, and the time of examinations; provided for the establishment of a botanical garden, and of collections in anatomy and in materia medica; for a joint committee of an equal number of persons from the Medical Society and the Corporation to nominate professors to be chosen by the Corporation, and also for a like joint examining board, in which the President of the Society had the casting vote in case of a tie; repealed the right of the Society to grant honorary degrees in medicine, which could hereafter be conferred by the President of the College upon recommendation of the Society; provided that each county could send, upon recommendation of the Society, a gratuitous student, and fixed the term of medical study for college graduates at two years, and for others at three years, attendance upon a single course of lectures being requisite for the license, and upon two courses for the doctorate.

It is evident from this summary that the Connecticut Medical Society shared to a considerable degree with the College the control of the Medical Institution. I do not suppose that the College would have entered into this agreement with the Medical Society, had not the circumstances been such as I have mentioned. Nevertheless this union between the College and the



BENJAMIN SILLIMAN, M.D.,
PROFESSOR OF CHEMISTRY (in Medical School), 1813-1853; EMERITUS, 1853-1864.

State Medical Society had at that time distinct advantages, the most important of which was the securing of the active interest of the physicians of the State in the new institution. In general the circumstances connected with the foundation and conduct of most medical schools in this country have not been calculated to secure the interest and sympathy of the great body of the medical profession.

No more competent testimony to the benefits derived from the union which existed here could be desired than that of Dr. Jonathan Knight, who says in his introductory lecture in 1853: "The result of this arrangement has been eminently happy; all unpleasant feeling was at once and forever allayed; the members of the Society became interested in the school; we have at all times had the benefit of their counsel and support, and it gives me pleasure to state that no instance of disagreement has ever arisen among the members of the Board, or between the School and State Society; on the contrary each has regarded the other as a fellow

laborer in the endeavor to promote and advance the interest of medical science."

The relations continued harmonious throughout the remaining period of existence of the agreement between the Society and the Medical School, but with changed conditions the union ceased to be useful and in some ways had become embarrassing, so that in 1884 by mutual consent it was annulled, and the entire control of the School, the official name of which had meantime been changed by the new charter of 1879 to that of "The Medical Department of Yale College," passed into the hands of the University.

The charter of 1810 by its limitation of the number of professors and of the period of undergraduate medical study, and its regulation of other matters better left to the discretion of the College, was an extremely inelastic instrument, and it is not surprising that repeated legislative changes were found necessary. There have been not less than four distinct charters of incorporation of the Medical School, and in addition five or six amendatory acts. The present charter, which seems to be free from the defects of its predecessors, was enacted in 1879.

At the time of its incorporation in 1810 the Medical Institution of Yale College was the sixth medical school in the United States, the others being the Medical Department of the University of Pennsylvania, founded in 1765, the College of Physicians and Surgeons in New York, founded in 1807, but a descendant of the Medical Department of Columbia University, established in 1768, and the Medical Departments of Harvard (1783), of Dartmouth (1797), and of the University of Maryland (1807).

A commodious stone building on Grove Street, erected by Mr. James Hillhouse, was secured for the use of the Medical School, and in 1814 this with an adjacent plot of ground was purchased by the aid of a generous donation by the State of twenty thousand dollars, obtained largely through the efforts of Dr. Nathan Smith. This building, which is now South Sheffield Hall, was the location of the Medical School until its removal in 1859 to its present site on York Street.

The members of the first Faculty of the Medical School, appointed in 1812, were in the order of arrangement of their names in the College catalogue: Eneas Munson, the Professor of Materia Medica and Botany; Nathan Smith, Professor of the Theory and Practice of Physic, Surgery, and Obstetrics; Eli Ives, Adjunct Professor of Materia Medica and Botany; Benjamin Silliman, Professor of Chemistry and Pharmacy, and Jonathan Knight, Professor of Anatomy.

Dr. Munson, to whom I have already referred, was an octogenarian at the time of his appointment, which was, as was intended, only an ornamental one, Dr. Ives, the adjunct professor, his pupil and friend, performing the active duties of his chair. The remaining members of this Faculty made a group of medical teachers who could challenge comparison with any similar group in this country. Of Benjamin Silliman it is not necessary for me to speak further, as his most important work lay outside of the immediate field of medicine, and will be considered by another speaker.

Dr. Nathan Smith, when he came to New Haven from Dartmouth, was already a star of the first magnitude in the medical firmament. Starting a poor boy in a small village in Vermont he managed by his own efforts to obtain a good general education and then at the Harvard Medical School and in Great Britain a medical education of a character then almost unknown in New England. He was the originator of the Dartmouth Medical School in 1797, the most distinguished member of the first Medical Faculty of Yale, and in 1820 the organizer of the Medical Department of Bowdoin College. He did much of his most important work in New Haven, where he remained until his death in 1829.

Nathan Smith shed undying glory upon the Yale Medical School. Famous in his day and generation, he is still more famous to-day, for he was far ahead of his times, and his reputation, unlike that of so many medical worthies of the past, has steadily increased as the medical profession has slowly caught up with him. We now see that he did more for the general advancement of medical and surgical practice than did any of his predecessors or contemporaries in this country. He was a man of high intellectual and moral qualities, of great originality and untiring energy, an accurate and keen observer, unfettered by traditions and theories, fearless, and above all blessed with an uncommon fund of plain common sense.

Nathan Smith's essay on Typhous Fever, published in 1824, is like a fresh breeze from the sea amid the dreary and stifling writings of most of his contemporaries. The disease which he here describes is typhoid fever, and never before had the symptoms been so clearly and accurately pictured. He recognized that this fever is due to a specific cause and is self-limited. It took courage in those days for a physician to write, "During the whole course of my practice I have never been satisfied that I have cut short a single case of typhus, which I knew to be such;" and again, "It does not follow, of course, that this disease in all cases requires remedies, or that a patient should necessarily take medicines because he has the disease." To him the lancet was not the "magnum donum Dei" that it was to Benjamin Rush, and he did more to do away with its indiscriminate use than any single man. The treatment which he advocated—cold water, milk, and avoidance of all violent remedies—is practically the same as that now employed, but it was many a day before physicians came to accept Dr. Smith's revolutionary views.

To the surgeon, Nathan Smith's paper on the Pathology and Treatment of Necrosis has in course of time become as much of a classic as the essay on typhous fever is to the physician. Here we find the same admirable description of symptoms, and the introduction of methods of treatment which anticipated modern surgery. This is not the occasion, even did time permit, to describe Dr. Smith's achievements in surgery. It must suffice to say that he was the first to perform a number of important surgical operations, and that in this branch, not less than in medicine, he was an innovator and reformer.

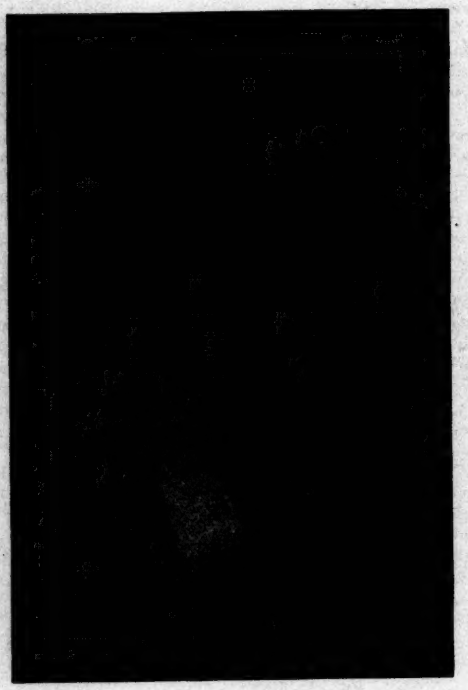
Although none of Dr. Smith's colleagues can be placed in the same rank with him as contributors to medical knowledge, they were men of excellent attainments and became distinguished teachers.

Dr. Eli Ives was connected with the Medical School until his death in 1861, having succeeded to the professorship of Theory and Practice of Physic upon the death of Dr. Smith in 1829, and becoming emeritus in 1853. He was a highly respected physician of large practice in this city. He was widely known as a botanist, and was credited with the most extensive knowledge of the indigenous materia medica of any man of his day, a taste acquired from his preceptor, Dr. Munson. His mind was richly stored with facts, and all were impressed with the value of his teachings.

Dr. Jonathan Knight, who was only twenty-three when appointed professor, became one of the most influential men in the medical profession of this country, having been twice President of the American Medical Association. He was transferred to the chair of surgery upon the death of Dr. Hubbard in 1838. Of dignified personal appearance and manner, with well

balanced mental powers, and fine literary culture, Dr. Knight has probably never had his superior in any medical school in this country as a finished lecturer. He was an active teacher in the Medical School for fifty-one years, dying only a few months before Professor Silliman, the latest survivor of the first Medical Faculty.

With this able and devoted group of teachers and a class of thirty-three students the Medical School began its work in November, 1813. To follow in detail its history from that day to this would far exceed the limits of this address. I regret that I can do no more than make mention of some of the professors who have passed to the majority: Thomas Hubbard, of necessity an inadequate successor of Dr. Nathan Smith in the chair of surgery, a plain self-taught man, of whom Dr. Knight says that he filled his position to



JONATHAN KNIGHT, M.D.,

PROFESSOR OF ANATOMY AND PHYSIOLOGY, 1813-1838; PROFESSOR OF PRINCIPLES AND PRACTICE OF SURGERY, 1838-1864.

the time of his death in 1838 "with great and increasing reputation to himself and benefit to the institution;" William Tully, a really remarkable man, of whom I had hoped to say much more, erudite, original, an experimentalist, unrivaled in his knowledge of the materia medica, an extensive contributor to medical literature; Charles Hooker, of good scientific training, who has the great merit of introducing the newer medicine with its methods of physical examination into New Haven, a writer of valuable papers on auscultation and percussion and on physiological subjects; Henry Bronson, scholarly, devoted to antiquarian research, contributor of important papers on medical history and biography; Worthington Hooker, interested in medical education and the improvement of professional organization, a facile writer, widely known as a useful popularizer of natural science; Moses Clark White, for thirty-three years Professor of Pathology, who taught as early as 1860 the use of the microscope in medicine in this School; Leonard Jacob Sanford, a faithful teacher of anatomy for nearly a quarter of a century, devoted to the interests of the Medical School; James Kingsley Thacher, endowed with unusual intellectual powers and capacity for original scientific investigation, eminent as a comparative anatomist, abreast of modern physiology and clinical medicine, whose early removal by death was an irreparable loss to this Medical School and to medical and biological science.

While I refrain in general from mention of the names of those who are still living and are the faithful and able successors of these distinguished men, I cannot in this connection pass over the name of Dr. Charles Augustus Lindsley, a member of the Medical Faculty for thirty-seven years and its executive officer for twenty-three years, a devoted teacher and eminent sanitarian.

The period of greatest prosperity of the Medical School, until quite recent years, was the first two decades of its existence, in which the average annual attendance of students was between 70 and 80. The annual attendance then fell to an average of between 30 and 40 for the four decades from 1850 to 1890. Since 1890 it has for the first time exceeded 100. Up to 1894 the largest class was that of 1822, which numbered 92, the largest number of graduates in any year up to 1897 being 36 in 1829. Of the 1221 graduates of the Medical Department up to and including 1900, 27.6 per cent. were also college graduates, and of these three-fourths were graduates of Yale College or of the Sheffield Scientific School. The highest ratio of college graduates (40.6 per cent.) was in the decade 1881 to 1890, when the total number of graduates was smallest.

It is pleasant to recall that the Medical Department, established through the efforts of the first President Dwight, entered upon a second era of prosperity in the administration of the second President Dwight, who in his annual reports has forcibly presented the needs and possibilities of this first offspring of the College.

The standards of the Yale Medical School have always been kept high in comparison with those prevailing at the time, and at certain periods the School has taken the lead in movements to improve medical education, which from about the end of the third to the middle of the eighth decades of the past century was in a woeful plight in America. At the beginning the course of medical lectures here extended through six months, a longer period than obtained at the time in any other medical school in this country.

The first organized effort to raise the standard of requirements for medical education in the United States was made by a Convention of Delegates from Medical Societies and Medical Schools which met in Northampton, Massachusetts, in 1827. The Yale Medical School faithfully conformed to the recommendations of this convention and went to the trouble of securing in 1829 from the Legislature an amendment of its charter whereby the period of medical study was increased to four years for all who were not college graduates, and to three for graduates, and knowledge of Latin and of Natural Philosophy was required for matriculation. The Medical College soon found itself standing almost alone, "faithful among the faithless," and in order to preserve its own existence, it was compelled after three years to return to the old order as regards the length of the period of medical study, although it retained the preliminary requirements, which, however, afterward became inoperative, as they were so far above the demands of other colleges.

The inadequacy of the system of didactic lectures for the training of medical students was nowhere in this

country earlier recognized than here. In 1855 the course was supplemented by daily recitations, and, as their advantages were realized, they received in the following years greater and greater emphasis, until they in combination with laboratory practice became at least as early as 1867 a distinctive, and certainly a valuable feature of the School.

In 1879 the Yale Medical Department placed itself in the front rank as regards its standards, with only a few companions at that time, by introducing a stated matriculation examination and a three years' graded course, lengthened in 1896 to four years. Clinical instruction and the recitation and laboratory plan of teaching, which had been early adopted, continued to be the basis of the course. The thoroughness of the training is attested by the unusual success of the graduates of the Yale Medical Department in competitive examinations for positions in the army, in hospitals, and in State Board examinations for the license to practice.

With the laboratory building erected in 1893 and the clinical building now in process of construction, the teaching resources of the Medical Department have been greatly increased, and there is every indication that it has entered on a new era of success and usefulness, but it cannot reach the height of its endeavor or of the position properly belonging to an important department of this great University without a large increase of its present meager endowment.

Of the total number of physicians who have received their liberal education at Yale College and the Sheffield Scientific School, less than one-fifth are graduates of the Yale Medical Department, and it is pertinent to inquire how their Alma Mater has fitted them for their subsequent professional studies. For the great majority and until comparatively recent years this collegiate training was furnished by the old-fashioned classical course, and there can be no question that this, combined with other influences of college life, gave an excellent discipline of mind and character, but with no peculiar adaptation to the study of medicine.

The advance of medical science and art during the last half century has given ever increasing prominence to the value to the student of medicine of a good practical knowledge of chemistry, physics, and general biology. It is to the great credit of this University that this need was first clearly recognized and supplied in this country by the Sheffield Scientific School, which in 1870 offered well planned courses in these branches of science, announced as intended especially for the preliminary training of prospective medical students. With the establishment of the Laboratory of Physiological Chemistry four years later the distinctive, pre-medical biological course was fully organized, and since 1889 this has been open also to students in the Academical Department.

No more convincing testimony to the importance of this new departure in collegiate education is needed than the mere mention of the names of some of those who were graduated from the Scientific School in the ten years following the establishment of this course and who have acquired distinction in medicine or in sciences akin to medicine. Fortunately I cannot illustrate my argument here by the selection of names from those who have passed away, and I trust that it will not be considered invidious if I cite names so familiar to physicians and biologists as those of Prudden, T. H. Russell, Hun, W. B. Platt, Chittenden, Yamagawa, Curtis, Sedgwick, H. L. Taylor, Gilman Thompson, E. B. Wilson, Mitsukuri, H. E. Smith, E. A. Andrews, Ely. Not only was the Laboratory of Physiological Chemistry under the direction of Professor Chittenden been of great service in the preparation of students for the study of medicine, but its contributions to a science of great medical and biological importance are unequaled in number and value in this country and have given it rank with the best laboratories of its kind in the world.

There have been all told not far from 2,300 graduates of Yale in all of its departments (including the Medical), who have become physicians, not counting twice the names of those graduated from more than one department. Of the graduates in arts (1702-1897) about 1100 (9 to 10 per cent.) have entered the medical profession, the percentage being about the same for the eighteenth and the nineteenth centuries, but varying considerably in different years and decades, as appears from data which I have inserted in a note.[1] Especially significant is the fact that from the classes 1822, 1824, 1825, 1826, and 1828, when the Medical Department was at the height of its early prosperity, the number of graduates in arts who became physicians was 80 per cent. above the general percentage for the nineteenth century, and that over 41 per cent. of these received their medical degree from the Yale Medical School, as against 24 per cent. in general for the period since the opening of the Medical Department. Of the graduates of the Scientific School (1852-1897) at least 193 (9.1 per cent.) were later graduated in medicine, 22.3 per cent of these receiving their degree from the Yale Medical Department.

It is of course out of the question to attempt to give here even the most summary account of the more than two thousand Yale physicians of the nineteenth century. Among those no longer living are the names of such famous men as Alexander H. Stevens, Samuel H. Dickson, George McClellan, Nathan R. Smith, William Power, Alfred Stillé, Samuel St. John, William H. Van Buren, Edmund R. Peaslee, J. Lewis Smith, Daniel G. Brinton, William T. Lusk, and many others deserving of mention did time permit. The graduates of Yale in the medical profession have contributed their full share to the making of the medical history of this country. Over one hundred became professors in medical colleges, especially noteworthy being the number and distinction of those who have been and who are connected with the medical schools in New York City. At least thirty have been presidents of their State medical societies.

In all these two hundred years of her existence men have gone forth from Yale, who have adorned the profession of medicine. Among them have been great teachers, leaders who have advanced medical knowledge, improved medical and surgical practice, and raised the standards of professional life and of medical education, men who have served their country in a professional capacity in peace and in war, and many more who have led the useful lives of general practitioners, honored in their homes and by their colleagues, and contributing to the welfare of the communities where they have lived.

In centuries past the greatest renown of many universities lay in their medical faculties. There have been later times when the conditions of medicine and of medical education made it less fit to enter into the life and ideals of a university. It is not so to-day. Medicine has now become one of the great departments of biological science with problems and aims worthy of the highest endeavor of any university, surely none the less worthy because they are associated with human interests of the highest importance.

The union of medical school and university should be of mutual benefit. Medicine needs the influences of a university for its highest development, and the usefulness and fame of a university are greatly increased by

[1] The notes accompanying this address are omitted from this publication.

a strong medical department. There is to-day no direction of scientific research more productive in results of benefit to mankind and in the increase of useful knowledge than that upon which medicine in these later years has entered, and there can be no nobler work for a university than the promotion of these studies.

But medical teaching and research can no longer be successfully carried on with the meager appliances of the past. They require large endowments, many well-equipped and properly supported laboratories, and a body of well-paid teachers thoroughly trained in their special departments. With an ampler supply of such opportunities as these there is every reason to believe that the Yale Medical Department would take that important position in the great forward movement of modern medicine to which its origin, its honorable history, and the fame of this ancient University entitle it. May the next Jubilee find medicine holding this high position in Yale University.

ORIGINAL ARTICLES.

THE LOCAL TREATMENT OF THE ORGANS.

BY BYRON COAKLEY, M.D.,
OF CHICAGO.

THOUGH it has always been considered that the internal organs would not absorb substances injected directly into their parenchyma, I was inclined to believe differently, and I have determined by experiments that the principal organs can be treated locally. I am now in position to assert that the liver, the spleen, the lungs and the kidneys can be beneficially influenced by intra-organic medication and that the heart will respond to intrapericardal stimulation.

In support of my contention I offer the following theoretical considerations and experimental evidence. To my mind, the latter is by far the more important. In my experiments reported in this paper I have used decinormal and saturated saline solutions. Experiments in which other remedial agents have been used will form the subject-matter of another paper. I call the method which I here submit to the profession the intra-organic method. To avoid fallacies and to avoid basing conclusions on false premises, I verified each step on which the intra-organic method is based by laboratory experimentation. Objections have been made to the method; it has been claimed that the employment of this method is associated with dangerous objections. I will enumerate them and attempt to demonstrate that they are theoretical objections and that when the method is employed intelligently they can not and will not occur. I have but recently returned from Europe, where I went to demonstrate this work on the animal before some of the larger scientific bodies, and the following are the principal objections which I heard a few moments before the Berlin, Vienna, Paris, and London demonstrations. They considered the method imbued with the danger of (1) sepsis; (2) air embolism; (3) hemorrhage; (4) formation of hematoma; (5) pressure necrosis; (6) paralysis; (7) rupture of an internal organ or of its capsule; (8) general anemia of the organ injected; (9) local sclerosis from puncture by needle.

I feel certain that these objections were short-lived, for I demonstrated by making injections directly into the organs (after laparotomy) that none of those accidents could happen if the proper precautions were taken. I heard no adverse comment after the demonstrations. The following is a consideration of these objections.

1. *Sepsis.*—By the observance of the modern surgical teachings as to asepsis and antisepsis, this danger can be positively eliminated.

2. *Air Embolism.*—This does not exist, because the instrument which the employment of this method necessitates, the organometer, does not permit the admission of air.

3. *Hemorrhage.*—The operator should have precise anatomical knowledge. He should not puncture large venous or arterial trunks.

4. *Formation of Hematoma.*—This does not occur. The needle used is so fine that it does not cause large extravasations of blood. In thoracentesis, if one accidentally puncture the lung, no hematoma results. In the use of an exploratory syringe for locating a liver abscess, the needle, if it acccidentally puncture the liver substance, does not cause a hematoma.

5. *Pressure Necrosis Due to Pressure of Injected Solution.*—This does not occur, as shown by over one hundred experiments on dogs. To determine pressure necrosis the pressure must be long continued, which it is not when intra-organic injections are practised, as the fluid injected is quickly absorbed.

6. *Paralysis.*—This cannot occur, as pressure of the injected fluid is not prolonged. No solution of continuity of mixed or of motor nerves is caused.

7. *Rupture of an Internal Organ or of Its Capsule.*—This can be avoided if we inject under low pressure and know the maximum amount of the solution of NaCl that can with perfect safety be injected in the different organs in a given time.

8. *Anemia of the Organ Injected.*—This can be avoided if we inject under low pressure, and do not inject an excessive amount of solution in any organ.

9. *Local Sclerosis from Puncture by Needle.*—The danger of this is remote, as the needle is very fine and there is no hemorrhage. The abscess of hemorrhage is positive.

In the experiments it was found preferable to use an agent which was nontoxic and nonirritating. The decinormal salt solution was considered the most acceptable agent, as it is both nontoxic and nonirritating.

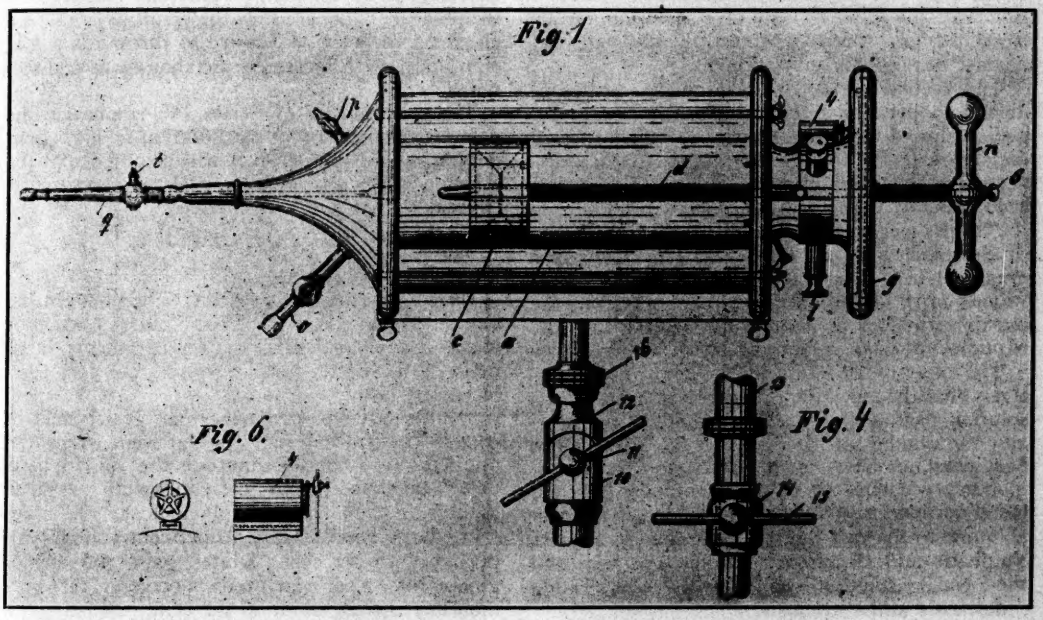
Before using the agent in the intra-organic method, numerous experiments had to be conducted to determine as nearly as possible its physiological action. In certain diseases a high leucocyte-count is of good prognostic omen; and to determine what method of administration and what temperature of the solution would yield the best results special experiments were made along

these lines. I first conducted a series of experiments to ascertain the value of salt solution as a protector of the red blood-cell against hemoglobin displacement by CO_2. Next I made a series of experiments to determine the value of NaCl solution at different temperatures as a promoter of leucocytosis and as a stimulant to the organism as a whole. The following is a consideration of the former:

What is the most destructive agent constantly circulating in the blood? After studying the circulation in a general way I arrived at a temporary conclusion until more definite facts could be had. I concluded that carbon dioxide in excessive quantities would not only be deleterious to the red cells but would actually displace the hemoglobin. I drew the latter conclusions from frequently finding the blood serum stained after the dogs had suffered anesthesia narcosis. The following experiments will bear out my conclusions.

Black cur, 22½ lbs. Blood-examination: Whites, 8,100; polymorphonuclear 68, large lymphocytes 12, small lymphocytes 20; reds, 5,000,000; hemoglobin 90; cells intact.

The left femoral vein was exposed and a light pressure of carbon dioxide was allowed to flow into the vessel. The dog showed the deadly effects of the gas immediately. His blood was at once examined and the serum was found to be thoroughly stained, while the red cells showed nothing but their stroma and a white center. I had given the subject of sodium and CO_2 considerable thought, and on talking with different chemists found that they were pretty well agreed that sodium did not actually combine with CO_2, but that it had the power of holding the CO_2 in suspension, as, for instance, in the water used in soda fountains. I made the following experiments: I took two glasses; in one I put $^{9}/_{10}$ of 1 per cent. solution of NaCl, in the other pure water. I then held a hose attached to a tank containing CO_2 in the glass of pure water, and then tried to burn a match over the top of the glass; it went out immediately. I tried to burn at least a dozen different matches, but they were immediately extinguished. I then placed the hose in the glass containing the decinormal NaCl solution and, lighting a match, held it over the glass until it was completely consumed. I then tried the same experiment on dry salt in the bottom of a glass. This experiment was as follows:



I used two glasses. In one I placed 2 oz. of salt; the other was empty. I placed the hose containing the CO_2 in the empty glass and tried to burn a match over its top; it went out at once. I then placed the hose in the glass containing the dry NaCl and was able to burn five matches without any trouble, but the sixth went out. What does this mean? It must mean that a definite amount of sodium can take up a definite amount of CO_2. I shook the salt up in the glass, and then, holding a burning match over its top, I found no trouble in burning it and five others.

Now we will go back to the dog and see what can be done. If the sodium in the normal NaCl solution will do what I expect of it, hold in suspension the CO_2 and in that way allow the hemoglobin to be again taken up by the red cell, then we will be able to give the dog a chance for his life. I bled the dog down about one-third the general circulation and infused him through the

external jugular until the pulse was full and strong. I had hardly injected a pint of the NaCl solution when the respirations became very rapid and the pulse improved in quality. I injected the liver, spleen, kidneys, and pleural cavities, the latter 5 oz. each, with NaCl solution at 120° F. The dog improved rapidly and inside of fifteen minutes was again breathing normally and the pulse was 80 and strong. The blood was immediately examined by Dr. Roehr of the Columbus Laboratory. He found the serum clear and the hemoglobin again confined to the stroma of the red cells.

To my mind the above experiments show conclusively that a greater affinity exists between the sodium and the CO_2 than can possibly exist between CO_2 and the red cell constituents, and in this way the CO_2 is held in suspension in the blood serum, thereby protecting the red cell against hemoglobin displacement.

The second series of experiments was conducted to determine the comparative leucocytogenic value of the intravenous, subcutaneous, and rectal routes for the administration of the decinormal saline solution at 110° F. Only two of each class of experiments are here reported, as the results were uniform in all. The experiments of Series II. prove conclusively that there is a greater leucocytosis to be secured from intravenous injections than can be secured from the intraintestinal or subcutaneous method, and the experiments show a leucocytosis in all cases.[1]

The experiments of Series III. show as conclusively that the elevation of the temperature of the solution from 110 to 120° F. increases considerably the number of leucocytes in the blood. The heat does not have much effect upon the hemoglobin percentage or upon the number of red blood-corpuscles. The high leucocytosis is probably due to the fact that the heat acts as a severe lymphatic and circulatory irritant, the heat and the NaCl solution undoubtedly accelerating endosmosis and exosmosis.

After enema (C Series 2 and C Series 3) we find the blood-count very little affected. There may be a slight increase of polymorphonuclear neutrophiles and a slight rise in the general blood-pressure, but the main action appears to be on the kidneys, bringing about an increased diuresis. While the means of increasing this diuresis has been through the heightening of the circulatory tension, still the action appears to be directly local upon the kidneys.

While the results of enemata have been fairly satisfactory, still the effects of subcutaneous injections (B Series 2 and B Series 3) are still more satisfactory, for the reasons best shown by the blood-count. By this method of using NaCl solution we have a higher leucocytosis with quicker and greater reaction. How can this be accounted for? If a pint of decinormal NaCl sol. at 110° F. be injected beneath the skin of the breast, it will take from one-half to two hours before it is entirely absorbed and yet the effects are almost immediate.

If a pint of decinormal saline solution be injected into the external jugular vein (A Series 2 and A Series 3), the effects are still more prompt and pleasing and the blood-count is in most cases greatly influenced.

Are these different degrees of metabolic activity directly the result of the stimulating properties of the salt on tissues of greater or less resisting power; or, are they the direct result of the stimulation afforded by the presence of heat and salt in tissues of different density; or, are they the result of increased bulk suddenly thrown upon the organism under different conditions; or, are they the result of irritants of a greater or less degree of intensity (different degrees of temperature); or, are they the result of organized effort on the part of Nature to throw off a foreign body, with increased metabolism as a direct result?

The experiments of Series IV. emphasize the value of using normal salt solution at high temperatures. In this series it will be noted that the solution was used at body heat, and very little circulatory reaction was obtained.

Body heat 98.6° F.

Series 4. A.

Brown cur, weight 23½ lbs. Blood-count before infusion: Whites, 8,000; reds, 5,000,000; whites, polymorphonuclear, 68 per cent.; large white, 8 per cent.; small white, 24 per cent.; hemoglobin, 98 per cent.

I injected 8℥ of decinormal NaCl sol. at 98.6 F. in the external jugular vein every ten minutes for forty minutes, the blood was then examined with the following results: Whites, 8,300; polymorphonuclear, 72 per cent.; large lymphocytes, 10 per cent.; small lymphocytes, 18 per cent.; whites, gain, 300; hemoglobin, loss, 2 per cent.; reds, 5,000,000; few normoblasts; hemoglobin, 96 per cent.

Series 4. B.

Black, female, weight 19¼ lbs. Subcutaneous injection. Solution injected at body heat. Whites, before experimenting, 6,500; polymorphonuclear, 74 per cent.; large lymphocytes, 14 per cent.; small lymphocytes, 12 per cent.; hemoglobin, 69 per cent.; reds, before experimenting, 5,200,000.

I injected 8℥ of decinormal NaCl sol. at 98.6° F. under skin of both the left and right sides of the abdominal walls every ten minutes for forty minutes. I then examined the blood with the following results: Whites, 8,500; polymorphonuclear, 68 per cent.; large lymphocytes, 12 per cent.; small lymphocytes, 20 per cent.; whites, gain, 2,000; hemoglobin, 66 per cent.; reds, 4,800,000; reds, loss, 400,000; hemoglobin, loss, 3 per cent. Examination of the blood one hour and a half later showed whites, 8,700; polymorphonuclear, 71 per cent.; large lymphocytes, 18 per cent.; small lymphocytes, 11 per cent.; whites, gain, 2,200; reds, 5,000,000; hemoglobin, 80 per

[1] Allowance was made in every case for postdigestive leucocytosis.

cent.; reds, loss, 200,000; hemoglobin, gain, 11 per cent.

Series 4. C.

Large brindle, weight 62 lbs. High enema of 2 quarts at 98.6° F. was given and rectum clamped to prevent expulsion.

Blood-count before experiment showed: Reds, 5,800,000; hemoglobin, 100; whites, 7,200; polymorphonuclear, 60 per cent.; small lymphocytes, 28 per cent.; large lymphocytes, 12 per cent.; reds after two hours, 5,600,000; whites after two hours, 8,000; polymorphonuclear, 86 per cent.; small lymphocytes, 23 per cent.; large lymphocytes, 11 per cent.; hemoglobin, 98 per cent.; reds, loss, 200,000; whites, gain, 800; hemoglobin, loss, 2 per cent.

While the effect of the action of the salt on the organism is apparent in the experiments of Series 4, yet on the whole I can find no great circulatory change. In all the cases thus far reported a dog from each series was kept alive for one week and the blood examined for the red and white count and hemoglobin percentage and it was found that the condition in general (in this series) remained about the same, with the exception of a higher leucocyte count.

Is blood-letting deleterious or beneficial to the organism as a therapeutic measure in the treatment of disease? I quote the following from Osler's Practice of Medicine in support of the measure:

"The reproach of Von Helmont, 'A bloody Moloch presides in the chair of medicine,' cannot be brought against the present generation of physicians. During the first five decades of this century the profession bled too freely, but during the last decades we certainly bleed too little."

Dr. John Parmenter, in Park's Surgery, says: "In whatever way blood may be withdrawn from the body, there can be no doubt of the value of such a therapeutic agent in properly selected cases, and it is to be regretted that such a simple and direct measure should have been supplanted by much less effective and more depressing medicinal means."

In experiments conducted to determine how much blood could be withdrawn from the organism and life maintained by the decinormal salt solution, I found that bleeding improved the condition of the dogs, that it was always followed by an immediate increase in the leucocyte-count, and ultimately by an increase in the red cell-count and hemoglobin percentage. Leucocyte, red cell and hemoglobin increase is made evident by the experiments of Series V.

Series 5. A.

Black and white cur, weight 24 lbs. Blood examinations before experiment: White cells, 9,000; polymorphonuclear, 72 per cent.; small lymphocytes, 18 per cent.; large lymphocytes, 10 per cent.; hemoglobin, 100 per cent.; red cells, 5,000,000. I withdrew 9 oz. of blood from the external jugular vein. Dog showed no particular shock and seemed strong next day, when blood examination showed: White cells, 12,000; polymorphonuclear, 72 per cent.; small lymphocytes, 12 per cent.; large lymphocytes, 16 per cent.; hemoglobin, 100 per cent.; white cells, gain, 3,000. Reds, —. Blood examination five days later showed: White cells, 13,000; polymorphonuclear, 78 per cent.; small lymphocytes, 6 per cent.; large lymphocytes, 6 per cent.; myelocytes, 10 per cent.; hemoglobin, 100 per cent. Reds, 5,200,000; white cells, gain, 1,000; red cells, gain, 200,000.

Series 5. B.

Spotted coach dog, weight 30½ lbs. Blood-count before experiment: Whites, 8,000; polymorphonuclear, 72 per cent.; small lymphocytes, 16 per cent.; large lymphocytes, 6 per cent.; myelocytes, 6 per cent.; hemoglobin, 86 per cent. Reds, 5,000,000. Withdrew 14 oz. of blood; the animal immediately suffered great shock. He was put in a cage and in one hour the blood-

count showed: Reds, 6,200,000; whites, 20,000; polymorphonuclear, 54 per cent.; small lymphocytes, 20 per cent.; large lymphocytes, 7 per cent.; myelocytes, 19 per cent.; hemoglobin, 84 per cent.; reds, gain, 1,200,000; whites, gain, 12,000; hemoglobin, loss, 2. Normoblasts in large numbers. Examination on third day. Gain or loss after first examination: Reds, loss, 1,800,000; whites, gain, 4,200; hemoglobin, loss, 26. Whites, 12,200; polymorphonuclear, 66; small lymphocytes, 23; large lymphocytes, 11; hemoblobin, 60. Reds, 3,200,000. Great many normoblasts. Dog seemed stronger. Gain or loss after first examination: Reds, loss, 1,800,000; whites, gain, 4,200; hemoglobin, loss, 26. Examination on sixth day: Whites, 14,000; polymorphonuclear, 80 per cent.; small lymphocytes, 14 per cent.; myelocytes, 6 per cent.; hemoglobin, 60 per cent. Reds, 3,600,000. Many normoblasts. Gain or loss after first examination: Red, loss, 1,400,000; whites, gain, 6,000; hemoglobin, loss, 20. Examination on fourteenth day: Whites, 11,000; polymorphonuclear, 70 per cent.; small lymphocytes, 18 per cent.; large lymphocytes, 12 per cent.; hemoglobin, 100 per cent. Reds, 5,300,000. Very few normoblasts. Gain or loss after first examination: Reds, gain, 300,000; whites, gain, 3,000; hemoglobin, gain, 14 per cent.

Having shown that decinormal salt solution caused increased leucocytosis, and that bleeding caused a still greater leucocytosis, I concluded that by combining the two measures I would get their combined effects. The experiments of Series VI. confirmed my conclusions. In experiment B of this series, it will be seen that at the end of six days there were still a marked leucocytosis, an increase of the hemoglobin percentage and an increase of the red cell-count. I got better results in those cases in which frequently repeated small quantities of blood (2 to 4 oz.) were withdrawn every three or four hours, each blood-letting to be followed by an infusion of decinormal salt solution of three or four times the quantity of blood withdrawn.

Series 6. A.

Black cur, weight 40 lbs. Blood examination before experiment: Whites, 7,200; polymorphonuclear, 70 per cent.; small lymphocytes, 20 per cent.; large lymphocytes, 10 per cent.; hemoglobin, 90 per cent.; reds, 5,150,000.

The external jugulars were exposed, a trocar was thrust into the left jugular and an infusion needle into the right. The NaCl solution was then allowed to pass into the vessel, and at the end of two minutes the blood was allowed to flow from the trocar in the left jugular; 4 oz. of blood were withdrawn and 12 oz. of decinormal NaCl sol. at 110° F. were injected. The dog gave evidence of little or no shock and seemed as strong as ever. At the end of an hour the blood was examined with the following results: Whites, 7,400; polymorphonuclear, 72 per cent.; large lymphocytes, 12 per cent.; small lymphocytes, 22 per cent.; hemoglobin, 88 per cent. Reds, 5,000,000. Few normoblasts. Gain or loss after first examination: Reds, loss, 150,000; whites, gain, 200; hemoglobin, loss, 2 per cent. The blood was examined on the fifth day after operation with following results; Whites, 8,000; polymorphonuclear, 80 per cent.; small lymphocytes, 12 per cent.; large lymphocytes, 8 per cent.; hemoglobin, 90 per cent. Reds, 5,200,000. No normoblasts. Gain or loss after first examination: Reds, gain, 50,000; whites, gain, 800.

Series 6. B.

Yellow cur, weight 27½ lbs. Blood examination before experiment: Whites, 9,000; polymorphonuclear, 68 per cent.; small lymphocytes, 12 per cent.; myelocytes, 11 per cent.; large lymphocytes, 9 per cent.; hemoglobin, 68 per cent. Reds, 4,800,000. External jugulars exposed, the needle and trocar arranged as in experiment 6. A; 4 oz. of blood were withdrawn every three hours for eighteen hours, and 8 oz. of the decinormal NaCl sol. at 110° F. were injected after each bleeding. Blood examination after first hour showed: Whites, 10,000; polymorphonuclear, 70 per cent.; small lymphocytes, 10 per cent.; large lymphocytes. 6 per cent.; myelocytes, 14 per cent. Reds, 4,800,000; hemoglobin, 68 per cent. Loss or gain after first examination: Whites, gain, 1,000. Blood examined at end of sixth hour: Whites, 11,000; polymorphonuclear, 74 per cent.; small lymphocytes, 8 per cent.; large lymphocytes, 18 per cent. Reds, 4,800,000; hemoglobin, 70 per cent. Loss or gain after first examination: Hemoglobin, gain, 2; whites, gain, 2,000. Blood examination on ninth hour: Whites, 14,000; polymorphonuclear, 80 per cent.; myelocytes, 8 per cent.; small lymphocytes, 12 per cent. Reds, 4,600,000; hemoglobin, 66 per cent. Loss or gain after first examination: Hemoglobin, loss, 4 per cent.; whites, gain, 5,000; reds, loss, 200,000. Blood examined on twelfth hour: Whites, 14,000; polymorphonuclear, 72 per cent.; small lymphocytes, 11 per cent.; myelocytes, 6 per cent.; large lymphocytes, 11 per cent. Reds, 4,600,000; hemoglobin, 70 per cent. Loss or gain after first examination: Hemoglobin, gain, 2 per cent.; whites, gain, 5,000; reds, loss, 200,000. Blood examined on fifteenth hour: Whites, 16,000; polymorphonuclear, 79 per cent.; small lymphocytes, 21 per cent. Reds, 4,700,000; hemoglobin, 68 per cent. Loss or gain after first examination: Whites, gain, 7,000; reds, loss, 100,000. Blood examined on eighteenth hour: Whites, 16,500; polymorphonuclear, 76 per cent.; small lymphocytes, 14 per cent.; large lymphocytes, 10 per cent. Reds, 4,900,000; hemoglobin, 85 per cent.; few normoblasts. Loss or gain after first examination: Hemoglobin, gain, 17; whites, gain, 7,500; reds, gain, 100,000. Blood examined on sixth day: Whites, 12,000; polymorphonuclear, 72 per cent.; small lymphocytes, 11 per cent.; large lymphocytes, 17 per cent. Reds, 5,100,000; hemoglobin, 92 per cent. Loss or gain after first

examination: Hemoglobin, gain, 24 per cent.; whites, gain, 3,000; reds, gain, 300,000. The red cells made a gain of 300,000 and the whites made a gain of 3,000. Hemoglobin gained 24 per cent. Dog was very active.

Series 6. C.

Fox terrier; weight 18 lbs. The jugulars were exposed, needle and trocar introduced, as in experiments A and B, and 6 oz. of blood removed from the circulation; 10℥ of decinormal NaCl sol. at 110° F. were then injected. Blood-count before injection showed: Whites, 7,200; polymorphonuclear, 68 per cent.; small lymphocytes, 12 per cent.; large lymphocytes, 20 per cent. Reds, 5,150,000; hemoglobin, 90.

After injection (3 hours) blood-count showed: Whites, 8,100; polymorphonuclear, 74 per cent.; small lymphocytes, 11 per cent.; large lymphocytes, 15 per cent. Reds, 6,000,000; hemoglobin, 92 per cent.; few normoblasts. Gain or loss after first examination: Hemoglobin, gain, 2; reds, gain, 850,000; whites, gain, 900.

Six hours after the first injection 8 oz. of blood were withdrawn and 14 oz. of the decinormal NaCl sol. at 110° F. were injected. Blood-count showed: Whites, 22,000; polymorphonuclear, 74 per cent.; small lymphocytes, 26 per cent. Reds, 6,000,000; hemoglobin, 93 per cent; normoblasts were present in large numbers. Gain or loss after first examination: Hemoglobin, gain, 3 per cent.; whites, gain, 14,800; reds, gain, 850,000.

Series 6. D.

Gray bull, weight 24 lbs. Jugulars exposed as in experiments A, B and C, and the infusion needle and trocar inserted. Blood-examination before experiment showed: Whites, 7,200; polymorphonuclear, 70 per cent.; large lymphocytes, 18 per cent.; small lymphocytes, 12 per cent. Reds, 5,100,000; hemoglobin, 91 per cent.

One hour was taken to withdraw 12 oz. of blood and then 20 oz. of the decinormal NaCl sol. at 110° F. were injected. Blood-count showed: Whites, 20,000; polymorphonuclear, 74 per cent.; small lymphocytes, 22 per cent.; large lymphocytes, 4 per cent. Reds, 5,600,000; normoblasts present; hemoglobin, 100 per cent. Loss or gain after first examination: Whites, gain, 12,800; reds, gain, 500,000; hemoglobin, gain, 9 per cent.

At the end of three hours 20 oz. of blood were slowly withdrawn and 32 oz. of the decinormal NaCl sol. at 110° F. were injected. Blood-count: Whites, 41,000; polymorphonuclear, 10 per cent.; small lymphocytes, 60 per cent.; large lymphocytes, 15 per cent.; myelocytes, 15 per cent. Reds, 7,000,000; nearly all nucleated; hemoglobin, 92. Loss or gain after first examination: Whites, gain, 33,800; reds, gain, 1,900,000; hemoglobin, gain, 1 per cent.

The following will show the marked effect of heat and the concentrated salt solution on heart muscle when applied locally to that organ:

Dog D. of Series VI. was very weak at the end of the operation and the heart showed signs of giving out. A needle attached to the organometer holding 2 oz. of the saturated NaCl sol. at 120° F. was thrust into pericardium and then a wait was made for the heart beat to become as weak as possible without death ensuing. I was obliged to wait about forty minutes for this to take place, and when the heart action was simply a flutter I injected (taking forty to fifty minutes to complete the injection) the solution. It was about ten minutes after the solution was introduced before any great result was noticeable. At the end of fifty-five minutes the heart's action was stronger and the respiration showed signs of improvement. At the end of sixty-five minutes the respirations were 40, pulse 100. At the end of one hundred minutes the pulse was 70, the respiration 22. The dog was put in ice bath with the idea of concentrating the circulation as much as possible. The pulse at the end of one hundred and thirty minutes was 110, respirations 40, but they never went higher than these figures. A blood-count at the end of two and a half hours showed:

Whites 90,000, small lymphocytes 70, myelocytes 15, large lymphocytes 15, reds 1,200,000. All nucleated. Mostly normoblasts. Hemoglobin 21.

Dog recovered. At the end of twelfth day blood-count showed:

Whites 10,000, polymorphonuclear 14, small lymphocytes 56, large lymphocytes 15, myelocytes 15, reds 4,500,000. Great many nucleated cells.

From the results of my work thus far I can draw but one conclusion, and that is that the greatest possible localization of effort is necessary before we can expect to get the great reaction necessary to combat serious diseases. If the seat of the disease can be gotten at there will be but little trouble in taking care of the systemic requirements. If the appendix be involved, we remove the local trouble first and then look after the circulation, etc. If the bladder be diseased, we treat the bladder first and the systemic conditions are a secondary consideration. But if the heart, liver, lungs, spleen, and kidneys be involved, we must open either the abdominal or thoracic cavities and treat them surgically, or depend upon the usual routine of drugs; and when the latter treatment is resorted to we know nothing positive of the effects that will follow. I am not holding the value of drugs cheaply; on the contrary, I would advocate their use as long as the organism will respond to them without injury. But when they have accomplished all they can, what is left? Nothing! If the system be overloaded with toxins and the already overworked kidneys refuse to act, we must depend upon an equally weak heart for blood-pressure, and, if that cannot be obtained, the patient will probably die. If we have a hematogenous jaundice following malaria, severe fevers, pernicious anemia, etc., we must depend upon elimination through the already over-worked organs, and for

activity of the liver-cells we must depend upon drugs, lavage of the bowel, etc.

In acute conditions of the spleen, what can be done by the methods now in vogue? Nothing in the way of direct stimulation except external application of heat, etc. In consolidated areas of pneumonic lung, what can be done at this time in the way of direct treatment? Nothing but external application of heat, cold, etc., and the internal administration of such drugs as carbonate of ammonia, codeine, etc.

The pathologists tell us that the spleen should be looked upon in pathological conditions as the destroyer of the blood, but they suggest little in the way of relief from such conditions. I could go on almost indefinitely and cite condition after condition in these organs that I feel we ought to endeavor to relieve by getting a greater localization of effort, backed up by as much fighting material as the organism can command under reinforced conditions. Then the question comes up, how are we going to improve upon the present methods? And how are we going to convert our embryonic ideas into a practicable system? I see no other way but boldly to enter the organs and treat them with the same fearlessness as we do the bladder, the intestines or the stomach. To be sure that a greater metabolism could be secured by direct injection of the organs, I made the following experiments and they fully sustain my claim that the intra-organic method of treating diseased organs is a rational one, and that when fully developed it will offer the largest number of successes.

In experiments of Series VII., I first ascertained to what extent high enemata, subcutaneous injections and intravenous infusions of decinormal salt solution would influence the metabolism of the organs, special attention being paid to the liver and the kidneys. It was found that the intra-organic injections increased the metabolism far more than the other methods of administration, as is well shown in the experiments of this series. In fact, there is no comparison between the results obtained by the intra-organic method and those obtained by the other methods.

Series 7. A.

White cur, weight 26¼ lbs.; blood-count before experiment:

Whites, 8,700 { Poly. 71 per cent. / S. L. 20 per cent. / L. L. 9 per cent.

Reds, 5,500,000. Hemo. 94 per cent.

Abdomen opened, urinary bladder and gall-bladder stitched to abdominal wall, opened and washed out. At the end of one hour the urinary bladder contained 13 of urine; the gall-bladder 2℥ of bile. Dog was then bled 4 oz. At the end of four hours from the first operation the urinary bladder contained 3℥ of urine; the gall-bladder 1½℥ of bile. The bladder and gall-bladder were then washed out. At the end of six hours, dog was given an enema of 2 qts. of decinormal NaCl sol. at 110° F.; this solution was held by clamp on rectum for 2½ hours. At end of this time the urinary bladder contained 2½℥ of urine; gall-bladder contained 1½℥ of bile. Dog was given a rest of six hours, then after washing out both bladders he was infused with 20 oz. of decinormal NaCl sol. at 110° F. At the end of 30 minutes the gall-bladder contained ½℥ of bile, 30 minutes later ½℥ more of bile, at the end of the second hour the gall-bladder held 1℥ of bile and at the end of two hours and thirty minutes, the gall-bladder held 20 minims of bile. The secretion of urine was as follows:

End 30 min. ½ ℥ of urine.
End of 1 hr. 3 ℥ of urine.
End of 2 hrs. 2 ℥ of urine.
End of 2½ hrs. ½ ℥ of urine.

The dog was then given a rest of 12 hours and the next day the kidneys and the liver were each injected (after washing out the bladder and gall-bladder) with 30 c.c. of the decinormal NaCl sol. at 110° F. In 10 minutes the urinary bladder held 12℥ of urine and the gall-bladder held 2½℥ of bile, or, as much bile was obtained in 10 minutes by injecting directly into the liver as was obtained by waiting two and one-half hours after infusion. The urinary bladder contained 6½℥ of urine in 2½ hours of normal activity; and 12℥ were obtained in 10 minutes by injecting both kidneys with 30 c.c. each of the decinormal NaCl sol. at 110° F. The bladders were carefully washed out after each measurement. The common duct was ligated and urethra clamped in every instance during these experiments. The blood was examined at the end of the last operation with the following results:

Whites, 14,000 { Poly. 79 per cent. / L. L. 15 per cent. / S. L. 6 per cent.

Reds, 5,450,000. Hemo. 90 per cent.

Whites { Gain 5,300 / Loss — } Reds { Gain — / Loss 50,000 } Hemo. { Gain — / Loss 4 per cent. }

Series 7. B.

Brindle cur, weight 21 lbs. Examination of the blood before experiment:

Whites, 5,800 { Poly. 68 per cent. / Myel. 20 per cent. / L. L. 12 per cent.

Reds, 4,200,000. Hemo. 72 per cent.

Abdomen opened, gall-bladder brought to surface, opened, washed out and anchored to abdominal wall. Common duct ligated. Urinary bladder brought to surface, anchored, opened, washed out and urethra clamped. Dog was given high enema (1 qt.) of the decinormal NaCl sol. at 110° F., rectum clamped, at end of one hour the gall-bladder was opened and found to contain 1℥ of bile, Sp. gr. 1012. Urinary bladder was opened and found to contain 3½℥ of urine, Sp. gr. 1015. Blood-examination after experiment:

Whites, 6,100 { Poly. 70 per cent. / Myel. 18 per cent. / L. L. 12 per cent.

Reds, 4,200,000. Hemo. 64 per cent.

Loss or gain after initial examination:

Hemo. { Loss —; Gain 2 per cent. } Whites { Loss —; Gain 3 per cent. }
Reds { Loss —; Gain — }

Series 7. C.

Fox terrier. Blood examination before experiment:

Whites, 6,800 { Poly. 69 per cent.; L. L. 15 per cent.; S. L. 16 per cent. }
Reds, 5,000,000. Hemo. 90 per cent.

Abdomen opened, gall-bladder and urinary bladder anchored to abdominal wall, opened and washed out, clamp applied to openings, common duct and urethra clamped. At end of one hour the gall-bladder contained ½3 of bile and the urinary bladder 1½3 of urine; 12⅓ of the decinormal saline solution at 110° F. were injected under the skin of the abdominal walls. At the end of second hour the gall-bladder contained 13 of bile, Sp. gr. 1013. Urinary bladder contained 23 urine Sp. gr. 1012. Blood-examination after experiment:

Whites, 6,950 { Poly. 72 per cent.; Myel. 1 per cent.; L. L. 18 per cent.; S. L. 9 per cent. }
Reds, 5,000,000. Hemo. 89 per cent.

Loss or gain after initial examination:

Hemo. { Loss 1 per cent.; Gain — } Reds { Loss —; Gain — } Whites { Loss —; Gain 150 }

Series 7. D.

Black cur, weight 14 lbs. Blood-examination before experiment:

Whites, 8,100 { Poly. 70 per cent.; L. L. 15 per cent.; S. L. 15 per cent. }
Reds, 5,100,000. Hemo. 94 per cent.

Abdomen opened, gall-bladder and urinary bladder anchored to abdominal walls, opened and washed out. Clamp applied to openings, common duct ligated and urethra clamped. At end of one hour gall-bladder contained ⅔3 of bile, Sp. gr. 1012. Urinary bladder ½3 urine, Sp. gr. 1008; 12 oz. decinormal NaCl sol. at 110° F. were injected in the external jugular vein. At the end of the second hour the gall-bladder contained 1½3 of bile, Sp. gr. 1010, urinary bladder contained 83 urine, Sp. gr. 1012.

Blood-examination after experiment:

Whites, 11,000 { Poly. 66 per cent.; S. L. 24 per cent.; L. L. 10 per cent. }
Reds, 5,200,000. Hemo. 90 per cent.

Loss or gain after initial examination:

Hemo. { Loss 47; Gain — } Reds { Loss —; Gain 100,000 } Whites { Loss —; Gain 2,900 }

Series 7. E.

Yellow cur, weight 36 lbs.

Whites, 10,100 { Poly. 64 per cent.; L. L. 28 per cent.; S. L. 8 per cent. }
Reds, 4,900,000. Hemo. 86 per cent.
(Animal had distemper.)

Abdomen opened, gall-bladder and urinary bladder anchored to abdominal wall, opened and washed out. Clamp applied to urethra and common duct ligated. At the end of one hour the gall-bladder contained ½3 of bile, Sp. gr. 1015; and the urinary bladder 1½3 of urine, Sp. gr. 1014. Urinary bladder and gall-bladder were then washed out and 30 c.c of decinormal NaCl sol. at 120° F. were injected in the left kidney; 30 c.c. of the solution were injected in liver at this time. In 15 minutes the gall-bladder contained 2½3 of bile, Sp. gr. 1010, and the urinary bladder contained 103 of urine, Sp. gr. 1012. The liver was again injected with 30 c.c. of the decinormal NaCl sol. and this time the right kidney was injected with 30 c.c. of sol. at 120° F. In ten minutes from time of last injection the urinary bladder contained 83 of urine Sp. gr. 1008, and the gall-bladder 23 of bile, Sp. gr. 1010. The bladders were then washed out and in 20 minutes from the time of last injection the gall-bladder contained 23 of bile, Sp. gr. 1002, and the urinary bladder 63 of urine, Sp. gr. 1004. The left kidney was again injected with 30 c.c. of the decinormal NaCl sol. at 120° F. A coarse needle was used, which caused hematoma; the latter disappeared in about two hours.

(To be continued)

NEURECTOMY FOR FACIAL NEURALGIA.

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FACIAL neuralgia is probably one of the most obstinate of the non-fatal affections with which the physician has to deal, and it taxes his skill and ingenuity and the patience of the sufferer more than any other disease.

"The pathology is doubtful. Excised portions of neuralgic nerves when examined microscopically sometimes seem to be normal and sometimes there are signs of inflammation, congestion, exudation, deficiency of blood, etc.; at other times degenerated nerve fibers, sclerosis of blood-vessels, alterations in axis-cylinders and ganglion cells are found" (Anders).

In the treatment of stubborn and long-continued cases the attending physician runs the gamut of antineuralgics as given in the materia medica, with only temporary benefit to his patient, till finally the latter is ready to listen to suggestions of a surgical nature. What does surgery offer in the way of relief? The answer comprises three methods of treatment: (1) *Division* of the nerve-trunk or branch that gives pain. This is hardly worth mentioning as there is very soon a reëstablishment of function and return of pain. (2) *Excision* of the ganglion of Gaster. With this I have had no personal experience. "It is, however, a difficult and dangerous operation, is followed by dangerous trophic lesions, and does not give permanent relief" (Anders). (3) *Excision* of a portion of the offending nerve. With this method I have had a varied and, with one

patient, a rather unique experience. These cases all had good family and personal histories.

Case I. was a man, seventy-one years old, who led a sedentary life. For fourteen years he had suffered from neuralgia in the right supraorbital and infraorbital nerves, chiefly in the latter. Eleven operations were done upon this patient between June 11, 1889, and March 22, 1898, inclusive, nearly nine years. In the first, June 11, 1889, about 1¼ inches of the right infraorbital nerve were removed. There was entire relief for about one year and great relief for about seventeen months. Pain then appeared in the distribution of the right supraorbital and right nasal nerves. At the second operation, November 22, 1890, three or four inches of the right supraorbital and one inch of the external branch of the right nasal nerves were removed. Relief in these regions was perfect, but in about two weeks frightful pain appeared in the right upper eyelid and in the region supplied by the right infraorbital nerve. A third operation was performed December 20, 1890; the right infraorbital region was reached through the cicatrix of the first operation and, as no distinct nerve-trunk could be discovered, all the periosteum for one-half inch around the foramen was removed. This undoubtedly contained nerve-filaments, as, when it was pinched with forceps, there was reflex action of the muscle of the eyelids and face of that side, indicating a painful sensation on the part of the patient and showing that the sensory nerve-filaments had been restored. Perfect relief followed for several months, after which there was a gradual return of the old trouble. In the fourth operation, July 14, 1892, the right supraorbital and right infraorbital regions were again operated upon through the old cicatrices and the periosteum removed from around the foramina for one-half inch, as no distinct nerve-trunks could be found. On the day following the operation there was severe pain in the same localities lasting a day or two, followed by partial relief of the neuralgia. The fifth operation was done on June 6, 1894. As the pain had become unbearable in the right infraorbital region, the same procedure was again resorted to and a periosteal disk was removed from around the foramen, with only partial relief. In the sixth, February 20, 1895, the right infraorbital region was again operated upon as before, with subsequent pain and then partial relief. In the seventh, September 28, 1895; the right infraorbital region was again the seat of operation, as in the fifth operation, with subsequent pain and then partial relief. In the eighth operation, August 8, 1896, the right supra- and infraorbital regions were subjected to operation with subsequent pain and then partial relief. In the ninth operation, June 28, 1897, the right infraorbital region was operated upon with subsequent pain, followed by partial relief. In the tenth, November 24, 1897, the right supra- and infraorbital regions were operated upon with subsequent pain, followed by partial relief. In the eleventh, March 22, 1898, the right infraorbital and right temporal regions had become so painful that they were operated upon. The fascia and muscles of the temporal region were removed down to the periosteum and the skin edges of the wound brought together with sutures. A marked depression was caused.

This operation, which was the last, gave considerable relief for some time, but the old trouble returned and the patient was at times a great sufferer from pains in the right infraorbital region, upper lip, and gums of the upper and lower jaw on the affected side. Various drugs, chiefly codeia, were then used constantly till his death, which occurred in April, 1901. After a period of suffering and confinement in bed for several days this patient had begun to sit up in a chair. On rising one day from the sitting posture he was observed to reel, stagger and fall; death ensued in about three-quarters of an hour; the patient was eighty-three years of age.

It will thus be seen that in this patient the right supraorbital region was the seat of operation four times, the right infraorbital region ten times, the right nasal nerve once, and the right temporal region once. All these operations gave more or less temporary relief, varying from four to eighteen months—in the earlier ones perfect relief and in the later ones only an amelioration of symptoms. On several occasions immediately after some of the later operations the pain seemed to undergo terrible exacerbation for several days, and then it would diminish, but not entirely disappear. The disfigurement was remarkably slight after the first two operations in any one place, but increased with each subsequent operation and became finally quite marked.

Case II. was that of a single woman, fifty-eight years old, of slender build. For eleven years she had suffered from pain chiefly in the distribution of the left inferior dental nerve, but also along the left auriculotemporal, gustatory, and mylohyoid nerves. About 3⅜ inches of the inferior dental nerve were removed. Perfect relief followed for six months, and then the pain gradually returned in the same place and was as severe as before, but there were still intervals of comparative relief.

Case III. was that of an old lady about sixty years of age, who had been suffering a long time from neuralgia of the inferior dental nerve of one side. About 3½ inches of the nerve were removed and perfect relief for eight or ten months followed, but the pain returned after that time.

Case IV. was that of a woman, fifty-three years old, who for thirteen years had been afflicted with inferior dental neuralgia of one side. About 2 inches of the nerve were removed with entire relief for one year, at the end of which time the pain began to return.

Case V. was that of an old man, who had for four years been suffering from left inferior dental neuralgia. One and a quarter inches of the nerve were removed, as in the preceding cases;

perfect temporary relief was followed in a few months by a return of the trouble.

Case VI. was that of a lady, seventy-two years old, with left infraorbital and inferior dental neuralgia for many years. These nerves were removed, with complete relief for six months, after which there was a return of the trouble.

The wounds healed by primary union. All the patients felt repaid for the trouble and discomfort of the operation by the relief afforded, though it was only temporary.

Before going farther it will be well to describe the location of the different foramina concerned with the various operations for facial neuralgia.

The supraorbital foramen is situated at the junction of the inner and middle thirds of the upper margin of the orbit, and is right at the edge of the bone. Sometimes it is a mere notch.

The infraorbital foramen is situated one-quarter of an inch below the middle of the lower margin of the orbit.

The mental foramen is situated at a point below and between the roots of the two lower bicuspid teeth, one-half an inch above the lower border of the inferior maxilla.

The inferior dental foramen is situated exactly in the center of the inner surface of the ramus of the lower jaw.

Primary Operation for Supraorbital Neuralgia.—Upon antiseptic precautions as to the hands and instruments of the operator and region of operation, an incision, about 1½ inches in length, is made through skin and fat, commencing near the bridge of the nose and curving upward and outward just above the eyebrow. Then with a blunt dissector or the handle of the knife the various branches of the nerve are dissected out as far as possible and cut off toward their distal ends. The trunk of the nerve is then traced up to the foramen, drawn out of the latter, and divided. Hemorrhage is easily controlled by packing with gauze and by pressure for a few minutes. The edges of the wound are then brought together with either fine catgut or silk, and a sterile dressing is put on.

Primary Operation for Infraorbital Neuralgia.—After the usual preliminary preparation of cleansing, an incision is made from the lower edge of the orbit vertically downward and a little outward over the foramen for about 1½ inches through skin, fat and muscles, to the periosteum. Then with a blunt dissector the three principal branches of the nerve, the external, internal and inferior, are exposed, dissected out as far as possible, and cut off toward their distal ends. They are then gathered up and traced to the foramen, from which the main trunk is drawn and divided. Hemorrhage from the infraorbital artery is profuse, but is controlled as before mentioned. The wound is then stitched together and dressed.

Operation for Inferior Dental Neuralgia.—After the usual preparation of cleansing and sterilization of hands, instruments, and field of operation, an incision is made beginning at a point one finger's breadth (½ inch) below the zygoma vertically downward in the midline of the ramus, about 1½ inches long, through the skin and fat to the masseter muscle. The edges of the wound are then drawn apart with retractors and a U-shaped flap consisting of muscle and periosteum is raised from the bone. A half-inch trephine is applied to the center of the ramus and the outer table of bone is removed, thus exposing the nerve, the proximal end of which is drawn out as far as possible and cut off. The inferior dental artery bleeds profusely, but is easily controlled by packing the cavity with gauze and leaving it till the next step of this operation is completed. This consists in making an incision 1½ inches long (the center of which should be opposite the mental foramen) along the lower border of the lower jaw. In this way is avoided the danger of cutting into the mouth and the resulting cicatrix shows very slightly. The upper flap is raised, the foramen is brought into view and the branches of the nerve are dissected out and cut off. The packing is then removed from the first wound (by this time the artery will have stopped bleeding) and the nerve is seized with forceps and drawn out of the canal its full length. The musculoperiosteal flap is brought down over the cavity in the bone and stitched in position with sterile catgut and the skin edges of both wounds brought together with the same suture material and a sterile gauze and cotton dressing applied.

In the secondary, tertiary, quartan, quintan, etc., operations upon the supraorbital and infraorbital nerves, the incision was made exactly in the line of the first incision and the superficial structures lifted on each side, but no nerve-trunk or well defined branches could be discovered. When the foramina were exposed there was found protruding from each a bundle of fibrous tissue which immediately spread out and mingled intimately with the surrounding periosteum. This had a white, glistening appearance on the surface next to the bone. When this tissue was pinched with forceps there was reflex action of the muscles of the eyelids and face, indicating a painful sensation on the part of the patient and showing that the sensory nerve filaments had been restored. A disk of this fibrous tissue one inch in diameter was removed from around the foramina. This method of procedure gave perfect relief in the secondary operations while it was only partial in the others; but it had the effect of causing the pain to be more amenable to the action of drugs, thus making life tolerable for some months. As the suffering became more and more severe, it also became less and less easily controlled by medicaments, and then the operation was justifiably repeated.

Smoke Nuisance in New York.—The continued use of soft coal throughout the city is commencing to create an irritation that the activities of the Health Board authorities cannot allay. May the coal strike soon be over.

MEDICAL PHOTOGRAPHY.[1]

BY MILTON FRANKLIN, M.D.,
OF NEW YORK.

THE successful photographing of medical subjects calls for a method of handling more or less unique in the practice of photography. It is my purpose in this paper to describe briefly the essential points in the apparatus and technic which are of value in this branch of the subject.

Almost any camera box can be used except those using roll films and small hand cameras which can not be focused. The exact type will depend on the particular class of work to be done. When the camera is to be used in only one location, a studio box with adjustable stand will be found the most convenient; but, on the other hand, when the pictures are to be taken at various places, an ordinary landscape camera provided with a firm tripod will be preferred. Rubber caps on the tripod tips or some form of tripod stay to prevent slipping on smooth floors will be a great convenience. It is of the greatest importance that the camera be provided with a focusing screen, so that the exact appearance of the picture may be known before the exposure is attempted. Rising and sliding fronts and swing backs are of little value, especially when the stand is capable of wide adjustment. A large lens board should be a feature, as most of the modern lenses have large flanges. The main point is rigidity, and the absence of this factor will be greatly felt. A rack and pinion focusing arrangement will add somewhat to the convenience of working, but is by no means necessary. The matter of size is quite arbitrary, though smaller than 4x5 inches will be found unsatisfactory, especially when full-length figures are attempted, and sizes larger than 8x10 inches will be found to be inconvenient to carry about, besides being expensive. On the whole, I find the greatest convenience in a camera 5x7 inches or 6½x8½ inches. With such a camera any plates of smaller size may be used in kits, and larger pictures may be obtained by the simple process of enlargement.

As in all photography the lens is the most important item, and upon it depends almost the whole quality of the work as far as mechanical means can control the end. The errors which are likely to be encountered are astigmatism and curvature of field. I assume that chromatic and spherical aberration are corrected. Astigmatism has been so far eliminated in some of the modern lenses that they are for all practical purposes anastigmatic. Curvature of field cannot in the nature of things be entirely overcome, and notwithstanding the wide claims made by the various manufacturers, an examination of any lens will disclose a different focal plane at the margin than at the center of the plate. The radius of the sphere has been so lengthened in some lenses, however, that the error, as far as practical results are concerned, is corrected over a reasonably wide field.

The qualities in a lens that are important to us are speed, depth of focus, definition and focal length. Speed depends on angular aperture, and as this varies as the square of the diameter for any focal length, it will readily be seen how two speeds may be mathematically compared. The ratio of the diameter to the focal length is the usual mode of expression for speed. The U. S., or Uniform System, is based upon this formula. In this system an aperture of F/4 is arbitrarily chosen as the standard, and given the U. S. No. 1. Each number ascending requires twice the exposure of the one preceding, or, in other words, has one-half the area; thus, No. 2 would be equal to F/5.656, No. 4 to F/8, No. 8 to F/11.31, etc. There have been various other systems of stops invented, notably those of Dr. Rudolph and the Voigtlaenders, in which it is sought to establish a minimal stop at which a lens can be employed and thence to work out a series of ascending stops with descending exposures, the opposite to that in the U. S.

Depth of focus is the quality of a lens which permits objects at different distances from the lens to be sharply focused in one plane. This quality does not in reality exist, but in practice it is approximated in lenses of very short focus and in others in which small apertures are used. In the case of short-focus lenses, the displacement of the screen for objects nearer than the parallax is so small that all objects excepting those very near the lens appear to be focused with equal sharpness. When small stops are used in a lens the apparent depth of focus is due to the fact that, owing to the small angular aperture, there is little divergence of the rays at small distances on either side of the focus and all images appear equally sharp. The quality is possessed by all lenses equally and independently of any type of construction, and is proportionate to the ratio of the diameter of the stop to the focal length in lenses of equal focus.

Here we might consider an important point, the speed desired in a lens for medical purposes. Depth of focus, as has been shown, will decrease in the same proportion as focal length and aperture are increased. Given a constant focal length, the depth will increase directly as the speed or aperture is diminished and *vice versa*. It will be found in practice that, with ample focal lengths for the different sized plates, a lens working at an aperture of F/8 will give the best general average of these qualities.

Definition is the quality in a lens which enables it to reproduce minute detail. It depends directly on the degree of correction for chromatic and spherical error and inversely on the degree of irrationality of the spectrum left outstanding. The presence of astigmatism will greatly reduce definition, especially at the margins of the field.

The focal length should be ample for the size of plate to be used and at least equal to one and

[1] Read before the Harlem Medical Association, 1901.

one-half times the longest side of the plate. Too short a focus would result in distortion of perspective when an object is near the camera.

To sum up, the ideal lens should be free from astigmatism, chromatic and spherical aberrations and curvature of field. It should give a perfectly sharp image over the whole field of the plate and possess reasonable speed. By reading the catalogues of the different lens-makers, reference will be found to many such lenses; in fact, the reader will be struck by the fact that only lenses possessing all these qualities are made at all. As a matter of fact they exist only in the catalogues, and I advise every one contemplating the purchase of an expensive lens to have it examined by an expert and its exact performance reported. This course will save time, money and annoyance.

Next to the lens in importance comes the shutter, as by its means control of the exposure is obtained. It should be capable of as direct action as possible, without the intervention of too much mechanism between the hand and the release. It should be capable of operation with little or no concussion and should be of simple construction to insure its being easily kept in order.

The plates used must often be of the utmost rapidity, but as very rapid plates yield results inferior in range of tone, slower ones should be used whenever the light will permit. Very slow plates are likely to exaggerate contrasts and should be avoided. In the solar spectrum the yellow between the lines D and E has the greatest visual intensity, while the other colors become less brilliant in a descending curve on either side toward A and H. The blue between F and G has little more intensity than the red, but the violet sinks into invisibility at H. A photograph of this spectrum on an ordinary plate will give a very different picture; here the yellow will appear quite dark, while the blue and violet will be quite light, and where the violet disappeared at H there will be a continuation of the photographic image. This is due to the fact that the emulsion of an ordinary dry plate absorbs only the colors blue, violet and ultraviolet in any quantity. Only the light rays which are absorbed by a sensitive emulsion will have any action on it. Vogel, however, has shown that rays absorbed by any substance contained in the emulsion will also cause chemical change, and upon this principle all color-sensitive plates are made. Different dyes are mixed with the silver emulsion, and by absorbing light rays of different lengths they cause the plates to be acted upon chemically.

In negatives of medical subjects abundant and minute detail is the most important requisite, being carried to such an extent in some cases as to reproduce the pores and minute hairs. When the negative is of a skin lesion, a superficial wound or other condition purely of the surface, detail with almost even lighting over the whole surface will give the most satisfactory results, the shadows being relatively unimportant. On the other hand, when the condition involves swelling, unevenness of surface, deformity of outline, etc., etc., light and shade will play an important part, giving modeling to the picture. Some subjects, as, for instance, preserved specimens, instruments, or the details of an operation, will require a combination of lighting and detail. It will be obvious from the foregoing that the subject of lighting is of much imporance; indeed, I do not hesitate to say that when this detail has been mastered the rest will be found to offer little difficulty.

In most offices the available light will come from a window or windows on one side of the room only. Skylights, slantlights, or, in a word, elaborate galleries are as a rule out of the question, so I shall confine my remarks to the conditions as they exist. Unfortunately a side light, especially one of limited extent, is about the poorest that can be had. It will be found that a subject posed so as to have one side of the figure lighted by such a light will have the other side in complete darkness as far as the resultant photograph is concerned, generally rendering the picture useless. There are various means of overcoming this fault in greater or less degree, the first and most simple being the employment of a reflector consisting of a frame carrying a plane of white cloth or paper so arranged as to reflect light from the window upon the shaded side of the subject; this is a very convenient and available method, and when the light is of sufficient strength it will be found to serve the purpose fully. In such a case, however, it will be necessary to interpose a screen between the source of light and the subject or the shadows will be too hard; the screen consists of a piece of thin white cloth supported on a wire or wood frame, and its use will soften the shadows and reduce the contrasts. When the natural light is insufficient, some form of artificial light must be resorted to; of the latter the most powerful is unquestionably the electric arc, which must be a large one of not less than twenty-five or thirty amperes capacity and must be fitted in some form of reflector. The disadvantages are the great size, cost, and immobility, which latter will result in the formation of too hard shadows. Besides this, it cannot be moved from place to place and, as it requires special wiring on account of the high current it employs, it cannot be used excepting in special places. Next comes the calcium light; this is subject to the same criticism as the electric light, with the exception that it can be used at any place. The magnesium flash lamp is perhaps the nearest approach to the ideal that we are likely to find; this instrument possesses the advantages of the lights already mentioned and none of the disadvantages, being extremely inexpensive to operate, weighing only a few ounces; it can be held in the hand and moved about, giving so brilliant a light that the fraction of a second suffices for an exposure. Whichever light is used it will be

necessary to interpose a screen, as already explained, between it and the subject. The magnesium lamp should be of the magazine pattern, which consists essentially of an alcohol lamp in which a flame is kept burning, a magazine in which a charge of pure magnesium powder is placed, and an arrangement whereby the powder may be blown through the flame by means of the breath. It will not be out of place for me to mention here that compound flash powders should never be used in such a lamp, as a most violent explosion would result in that case. Lamps, such as described, are to be found on the market ranging in cost from $2.00 to $5.00.

In situations in which only a side light is possible, my method of procedure with a magnesium lamp is as follows: The subject is placed at the side of the light and at a distance which will ensure even illumination over the whole area to be photographed. On the shadow side of the subject, somewhat to the front, at a distance of from two to seven feet, depending upon how large an area is to be included, a screen is placed. The camera is now focused as sharply as possible with the natural light and the diaphragm of the lens is regulated so as to require an exposure of about one-half a second on the lighted side. The plate having been placed in the camera, the shutter is set and the lamp is held in position behind the screen. The shutter release is held in one hand and the lamp in the other. The shutter is opened, the lamp blown and at the same time moved about behind the screen, and the shutter is closed. Some practice will be necessary to acquire this trick, but when it is once learned it will amply repay any time spent. Pure magnesium is to be preferred to any compound, as it can be slowly blown through the lamp and in this way the light can be regulated to the utmost nicety. When the natural light is strong, the lamp should be just sufficient to illuminate the shadow a little less than the high-light, but when the light is feeble the lamp can be made to give the high-light. The exact amount of powder to be used will depend on the working rapidity of the lens and plate, and on the distance of the lamp from the subject, remembering that the light increases inversely as the square of the distance. In many cases two lights on different sides will be found necessary. Compound flash powders may be used without any form of apparatus whatever. They are not to be recommended for this work as they are apt to startle the subject into moving, and the single explosive flash does not permit of regulating the shadows. In practice many peculiar contingencies will arise which no amount of abstract information can cover, but a little thought will generally suggest methods.

A head rest will always be necessary. This may be on a separate stand or may be attached to the back of a chair. The background should never be black, as that would result in halation wherever a white object were strongly illuminated against it, and much uncertainty of outline in the case of a dark head. A white one would offer objections quite as bad in the opposite extreme. A medium or rather dark gray will prove of the most general utility.

When a skin lesion is evidenced only by difference in color, the color may be exaggerated in the photograph by employing a screen of complementary color. This will necessitate lengthening the exposure. Isochromatic plates will be found useful when it is desired to reproduce color values.

All exposures should be rather full than otherwise, and development should be slow and complete. The great requisite, I repeat, is detail, and this can be had throughout the shadows only by, in a measure, sacrificing contrast. Overintensity can be reduced; thinness, the result of underdevelopment, can be corrected by intensification; but when the negative is under-exposed the case is as a rule hopeless. It is advisable at all times to make at least two negatives of every subject and to finish both carefully. Especially should this be done when any value is attached to the case or when any difficulty would be encountered in getting another photograph. There are numerous developing agents and formulæ available, and as a rule all can be made to give good results. Pyrogallol with sodium or potassium carbonate is the most populer. Ortol, methol in combination with hydroquinone or ortol, glycin, pyrocatechin, and rodinal are all capable of yielding satisfactory results. A knowledge of the actions of the different ingredients of a developer will prove of great benefit to anyone attempting photography in any of its branches. This is all, however, pure photographic technic and I cannot dilate on it here.

Given a good negative, little of importance remains to be done. The printing process, to be sure, should be executed with the greatest possible care as it shows the result of our labors, but with a good negative the rest is practically assured. Photographs may be printed and finished in various ways; the method will depend on the use to which the print is to be put. Only such methods should be chosen as give the greatest amount of detail and the widest range of tone, and foremost among these may be mentioned the Autotype or Carbon process. This method will give prints in many different colors and will more nearly approximate the limits in detail and gradation in the negative than any other process. Prints by this process, owing to the fine texture of the surface, may be used for reproduction, but the additional labor entailed in production and the length of time required to complete them bar them from any extensive application to our purposes. Next should be mentioned the Platinotype process. This gives very excellent results as far as detail and tone are concerned, is easy and rapid of manipulation and yields prints of great beauty and permanence. These prints are not suitable for reproduction on account of the texture of the paper, but may be used for records. Gelatinochloride papers, on ac-

count of the smoothness their surfaces are capable of attaining, are quite suitable for reproduction purposes, the prints are faily full of detail and have good tones, though somewhat contrasty; they are not permanent. These prints are to be finished for reproduction by being squeegeed upon a ferrotype or other smooth surface plate.

When it is desired to produce prints in the colors of Nature, photography offers a ready and convenient means in the three color process. This is based on the theory that all colors are one of the three primary, red, green, and blue-violet, or a mixture of them. Three negatives are made, one for each primary color. The negatives are made through screens which absorb all the light except that which it is desired to take. From these negatives three printing blocks are made which are inked up, each in its primary color, and printed one upon another. In this way each color will appear in its proper place and proportion.

Photomicrography, notwithstanding the many opinions to the contrary, is a rather difficult art, for, while it is possible to do some very satisfactory work at low magnifications with ordinary photographic apparatus combined with a microscope, it will be found that work done on more elaborate apparatus will show a distinct improvement on the former. When it is desired to do work with such improvised apparatus as just described, the method of procedure is as follows: The camera and microscope are placed upon a table, the tube of the microscope being placed horizontally and the lens being removed from the camera. The end of the microscope tube is placed at the center of the lens board of the camera through which it projects and provision is made for the exclusion of all extraneous light. The source of light, which may be anything from a kerosene burner to an arc light, is placed at a distance from and on a level with the center of the Abbe condenser. A condensing lens is placed between the light and microscope to parallelize the rays falling upon the Abbe condenser. A color screen should be placed in the path of the light, as the best results are obtained when the exposures are made with light rays of one wave length. The mirror of the microscope is of course removed or swung to one side. It is of importance that the ground glass screen of the camera be parallel with the stage of the microscope, that the light, condensers and lens be accurately focused and centered, and that the aperture of the Abbe be made to exactly correspond with that of the lens by means of the diaphragm. The object having been located on the stage, the image is carefully focused on the screen of the camera. The plate is then adjusted and the exposure made. This is accomplished by means of a shutter made of a piece of thick cardboard placed in the path of the rays so as to prevent any light from entering the microscope. The shutter is deftly raised and the light permitted to enter the camera for the length of time necessary to make the exposure and quickly replaced. An isochromatic plate of medium speed will give good results in the majority of cases. The color of the screen will be determined by the stain of the slide to be photographed, and green will be the most generally useful for bacteria. The length of the exposure will depend on illuminant, the working aperture of the lens, the amplification, the thickness and stain of the object, the color and density of the screen, and the rapidity and color sensitiveness of the plate.

Radiography hardly comes within the scope of this paper and besides is so thoroughly described and elucidated in many excellent treatises that I can afford to omit it here.

It may appear that I have emphasized too fully what is apparently abstract photographic technic; but as a matter of fact it is exactly this technic which is of paramount importance in medical as distinguished from general photography, in which latter it may be ignored to a greater or less degree. This is exemplified by the fact that scientific work calls for the highest degree of mechanical performance in the apparatus used, whereas in general photography artistic effects are sought, and the end is often better served by eliminating mechanical perfection.

153 West 46th Street.

MEDICAL PROGRESS.

THERAPEUTICS.

Treatment of Aneurism with Gelatin.—Gelatin has not yet conquered the therapeutic field assigned to it, and in the reported observations of its effects there are many discrepancies as to its curative value; yet the experience of C. MANCINI (La Riforma Medica, May 2, 1902) in its use is sufficiently encouraging to suggest the possibility of further advance in the treatment of aneurism with gelatin. Two cases are described, in both of which there was temporary amelioration of the subjective symptoms, and in one an actual decrease in the size of the tumor. In the first case, one of fusiform aneurism of the aortic arch, gelatin was administered hypodermatically, 5 cubic centimeters of the solution (gelatin 30; water 100; carbolic acid 1); being injected in the gluteal region daily for five days; but, unfavorable symptoms appearing, this method of administration was abandoned and daily enemata of a 50-per-cent. solution were substituted, beginning with 10 grams and increasing to 50 grams. This treatment was followed by marked improvement. In the second case, one of aneurism of the ascending aorta, enemata failed to produce any effect; but hypodermic injections of 10 cubic centimeters of a 30-per-cent. solution every four days brought about improvement in the subjective symptoms and decrease in the size of the tumor. In both cases, hypodermics were followed by some rise of temperature and a variable amount of pain. Both patients were on ordinary diet during the gelatin treatment and no other remedies were used; in the first case the usual drugs, combined with rest and a milk diet, had been essayed without noticeable improvement prior to treatment with gelatin. The first case came to autopsy, and stratified thrombotic masses were found in the aneurism, which the author believes were due to the coagulating power of the gelatin. He concludes that, while the results obtained were not permanently favorable, these cases demonstrate that gelatin is absorbed, that it coagulates blood, is not dangerous, and,

in the treatment of aneurism, has a direct influence upon its content.

Rachicocainization in Sciatica.—In an article dealing with this subject, A. MAGRI (Gazz. degli Osped., May 4, 1902) states that sciatica can be permanently cured by intraspinous injection of cocaine. The method used by Cavazzani of Venice, who has effected a cure in eight cases, is described by the author as follows: After careful disinfection of instruments and operative site, the cannula of a large Pravaz syringe is introduced between the third and fourth lumbar vertebræ, the escape of cerebrospinal fluid indicating when the proper point has been reached. Two to three grams of the fluid are allowed to flow into a porcelain receptacle in which two centigrams of cocaine hydrochlorate in powdered form have been placed. This quickly dissolves in the cerebrospinal fluid, and the whole is then drawn into the syringe and slowly injected. The after-effects of intraspinous injection of cocaine are said to be entirely absent or are reduced to a minimum when this method is followed. The mechanism by which the cure is effected has not as yet been satisfactorily explained. By some it is believed to be due to a leucocytosis which is generated in the cerebrospinal fluid, inducing modifications in the transmission of dolorific stimuli.

Chloride of Gold Treatment of Localized Tuberculosis.—After having enjoyed a wide range of therapeutic application, the chloride of gold has almost dropped into oblivion. This state of affairs is not a just one, if judgment may be formed in accordance with the observations of G. BUÉ (La. Sem. Méd., 1902, No. 17). He states that it has a general antiseptic power equal to that of iodine compounds and shows a special predilection toward the bacillus of tuberculosis in topical application. Its value in the local treatment of scrofulous ulcers has long been known. Bué extends its use to adenopathy, non-suppurative, and cold abscesses, by injection. His solution contains chloride of gold and chloride of sodium, each 1 gram, and distilled water 50 grams. Into the center of non-suppurating glands he injects from a half to one cubic centimeter of this solution every eight hours. Aspiration and evacuation of suppurating glands and osseous abscesses are followed by the injection of 1 cubic centimeter of the gold solution twice or thrice a week, the needle-hole being closed with cotton dipped in collodion. As the suppuration decreases, the frequency, quantity and strength of the injections are diminished. Bué finds that from four to twelve injections will cure the tuberculous glands and that in other lesions a complete, rapid cure is soon established, so that the mass becomes a mere nodule, after from ten to twenty injections. No bad after-effects have been observed. In tuberculous laryngitis this salt does not act as well as the other well-known measures.

A New Silver Compound.—In order to avoid the irritating effects of silver nitrate and still preserve its valuable antiseptic qualities numerous endeavors have recently been undertaken without any very remarkable results. A. C. BARNES and H. HILLE (Med. Rec., May 24, 1902), however, report the formation of a silver vitelline which seems to answer many of the requisites. They first derive a proteid, called gliadin, from wheat, and then transform this proteid into another by chemical processes, securing a proteid which is classified as a vitelline. A chemical combination is then formed with silver nitrate resulting in the preparation of a silver vitelline which has peculiar qualities. It contains 30 per cent. of silver and has a remarkable solubility, an ounce of it being completely soluble in two drams of water. These solutions do not precipitate albumin or sodium chloride and hence can have no coagulating or caustic effects upon mucous membranes. Its penetrating value is thus greatly enhanced and this has been demonstrated by experiment. Extensive trials have been made in the treatment of various inflammatory affections of the genito-urinary tract and of the eye with most gratifying results. A 1-per-cent. solution may be used in acute gonorrhea without any irritating effect, but with a decided immediate improvement.

Turpentine in Bleeding from the Uterus.—The hemostatic properties of the essence of turpentine have long been known, notably through Bilroth in 1883, but it is now little used. A Russian physician, L. F. LIENEVITCH (La Sem. Méd., 1902, No. 17), has been systematically employing it for five years to combat hemorrhages from the uterus. After having opened the neck of the uterus with a dilator, he fixes it with volsellum forceps and passes into the cavity of the cervix a tampon soaked in a solution containing 1 part of carbolic acid and 3 parts of glycerin, and then proceeds according to need to the further opening of the neck. After this is done he introduces into the cavity of the uterus a mass of iodoform gauze, 5- or 10-per-cent. strength, sufficiently large and long to fill the cavity completely, having previously soaked it in the turpentine. The outer extremity of this piece of gauze is in the vagina, which is carefully cleansed of all the excess of turpentine which runs out during the introduction of the gauze. A vaginal tampon of small dimensions is then inserted and the woman is told to remain in bed for five or six hours. At the end of this time when the patient begins to feel severe uterine colic, the gauze should be carefully withdrawn. In general the bleeding will be stopped in a definite manner and after a few days a normal mucous and bloody secretion is seen, abundant in quantity. Occasionally it is necessary to repeat this procedure when the bleeding recurs. The author has never seen the least sign of intoxication or any other unfavorable phenomenon follow this method of treatment. The procedure in question has proved itself particularly efficacious in cases of hemorrhage due to interstitial fibromata of the uterus and to inflammatory diseases, if the tamponade can be carried out without much dilatation of the os. He never yet has employed it in hemorrhages after delivery through fear of an embolism. He also notes the report of another Russian surgeon, M. B. Izatchik, of a case of severe nose-bleed which had resisted plugging of the fossæ and the internal use of ergot, but which was absolutely controlled by tampons soaked in turpentine.

Treatment of Chronic Glossitis.—The present knowledge of the etiology of this condition is so imperfect that the therapy has not advanced proportionately with that of other diseases. A new suggestion for its treatment is made by M. L. RAVITCH (Jour. Am. Med. Assoc., May 31, 1902) as follows: After painting the patient's tongue with a 15 per cent. solution of silver nitrate or a 5-per-cent. solution of chromic acid, the patient is told to hold the wet positive sponge electrode in one hand while the negative metal electrode is rubbed over the painted diseased areas for from ten to fifteen minutes. The action is thus explained: The silver nitrate is separated into the silver cation which goes to the negative pole and the nitric acid anion which does not separate as such, but decomposes the water present in such a way as to produce nitric acid and oxygen. This migration of the ions in opposite directions causes a deeper penetration of the nitric acid into the tissues and therefore a more complete effect. A similar action takes place when chromic acid is used. The author reports a successful result from this method in several obstinate cases of non-specific leucoma, keratitis, leucoplakia, chronic eczema and glossitis. The pain is quickly relieved, the hyperemia subsides, and the patches disappear. From twenty to thirty applications are necessary.

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SATURDAY, JUNE 21, 1902.

VON BEHRING'S IMMUNIZATION AGAINST TUBERCULOSIS.

A PAMPHLET lies before us which embodies the results of what would appear to be one of the most painstaking and, judged by its findings, one of the most weighty of systematic investigations in experimental therapeutics. We refer to the report of the work on tuberculosis conducted by Von Behring and his associates during the past seven years at Marburg. Long waiting is apt to heighten expectations and on this account often leads to unreasonable disappointment; but the most gratified of Von Behring's readers will be those who have most eagerly awaited the record of his work which is now available. "Is it now proven," Von Behring asks his readers, "that individuals of the bovine family can be voluntarily immunized against tuberculosis, so as to be able to withstand infection with a virus which is fatal to control animals?" The proof which precedes the question commands an affirmative reply.

Not even Koch's hypothesis concerning the duality of human and bovine tuberculosis can rob this reply of its formidable value, for the prevention of tuberculosis among cattle alone is an end in itself and will constitute an immense gain to the civilized world. But Von Behring heightens the striking effect of his promise of immunity to cattle by undertaking to prove that tubercle bacilli of human origin are not always harmless to the genus *Bos*, but are capable of producing in the latter a tuberculosis perhaps slightly different in intensity but of the same essential nature as that following infection with the virus of bovine tuberculosis itself. Thus we have in Von Behring's work, accepting it in its entirety, a brilliant discovery in animal therapeutics reflected across an immeasurable field in human therapeutics.

While groups of tubercle bacilli may differ in virulence and vitality according to the origin and treatment of the cultures employed, Von Behring calls attention to the want of striking morphological and cultural variations, to the identity of the anatomical and bacteriological findings after experimental inoculation of guinea-pigs and puppies, to the successful inoculation of cattle with tubercle bacilli derived from human hosts, to the possibility of immunizing cattle against bovine tuberculosis by means of the virus of human tuberculosis. Furthermore, the results of chemical analysis favor the notion of chemical unity and strengthen the foundations of the theory of bacteriological unity. These are some of the considerations that necessitate a rejection of Koch's hypothesis that tubercle bacilli virulent to cattle are harmless to man; it is eminently desirable that the public be made acquainted with this view and with the weight of authority which supports it, in order to offset the effects of the notoriety given to Koch's utterance at the London Congress. Reverting to the subject of preventive inoculation against tuberculosis, it is of interest to note that Von Behring's inoculation is similar in principle to that of vaccination rather than to the preventive inoculation employed in diphtheria or tetanus. In other words, immunization is ascribed to an alteration in the biological condition of the animal due to the infection to which it is voluntarily subjected, and is not attributable to the presence in the organism of a substance separable from the virus; it is an isopathic self-immunization in contradistinction to an immunization by antibodies possessing antitoxic or antibacterial properties. Von Behring states that susceptibility to tuberculosis can be materially reduced by a single inoculation of a weak or modified tuberculous virus. By a thorough preliminary study of the virus employed severe constitutional reactions can be avoided. The usual mild reaction once over, the animal may be regarded as again in perfect health; permanent pathological changes are

sought in vain at autopsy even after much observation.

As a measure of the progress of the self-immunization, the Marburg experimenters employed the tuberculin test. Under the influence of the immunization infection, for so the preventive inoculation must be regarded, susceptibility to tuberculin is at first increased, as manifested by fever, cough, loss of weight; as the symptoms of the immunizing infection subside the normal state of health is reëstablished and the susceptibility to tuberculin disappears. Von Behring does not forget that there is a difference between the voluntary infection of animals in the laboratory, where the virus is introduced into the blood by subcutaneous or other means, and the infection of live stock under ordinary agricultural conditions, the latter involving a gradual invasion of the respiratory or digestive tract. What protects against laboratory infection need not necessarily afford safety against the forms of invasion against which, after all, one is really striving.

Von Behring has certainly furnished by strictly scientific methods the weapon of attack against bovine tuberculosis. He has produced a virus by means of which unprotected cattle can be caused to die of acute miliary tuberculosis in a reasonably brief period, and he has prepared a weakened virus which has a saving power against the deadlier microbic poison. The conjunctive use of these two substances has rendered possible the formulation of laws of immunization of animals. The time is now ripe for general coöperation in Von Behring's work for the purpose of collecting epidemiological statistics by means of which the practical worth of protective inoculation can be shown. In Von Behring's own province of Hesse-Nassau the collection of such statistics has already begun, with the cordial support of the Government. This movement is worthy of emulation in this country.

THE PROPER DRINKING OF ADULTS.

So much has been written, and more perhaps said, in these last few weeks concerning the proper feeding of infants in summer that it is with a certain feeling of relief that we turn to a kindred subject, the choice of the most innocuous of the thirst-quenching compounds which are offered so freely to the more adult on every side. For that a nickel plus a child is equal to a soda water fountain is an equation that does not require the higher forms of mathematics to demonstrate, and that it is not always good to look on the wine when it is red is biblical in its antiquity.

A wise man, this time from the West—a chemist in Chicago, has just come to the front, with a violent diatribe on the evils of the perennial fountain, an attack not only on the syrups that dwell therein, but also on the more modern, extra-uterine so to speak, egg-and-fruit combinations that are so pleasing to the eye and which make the apothecary's sign one of the few of those that do not fail in dry weather. It is not that the syrups are synthetic in their composition, for this they have been from the time that chemicals became cheaper than the natural fruit. Nor is it the undeniable fact that it is not conducive to health to fill up the stomach when overheated with a quantity of any iced liquid, but it is, he states, because the coloring matters now used, are "noxious," and injurious and that not only do they do harm in themselves, but also increase the evil by inducing a greater consumption "from the insidiousness of their opalescent charm and the sheen of their iridescent beauty."

This is unfortunate, but they certainly do look cool, and the eye is, in these cases, affected before the palate; few of us have outgrown our early recollections of the roseate circus lemonade and these *fin de siècle* summer drinks are neither stale nor flat, even if from a sanitary standpoint they are unprofitable. But the anxious parent has still, however, the old time series of vanilla and ginger, chocolate and the like, to fall back on, if she desires to shun the greens and the violets of the up-to-date pharmacy, to say nothing of the interrogative finger of root-beer, which points a warning from every bill-board and boarding in the vicinity. That she will undoubtedly encounter opposition is true, for, although self-preservation may be the first law of Nature, it lies dormant in the stomachs of most of us till later years, and young people, outside the castle of Chillon, seldom grow gray in a single night.

Experience has not always taught its lesson with the eruption of the wisdom teeth, and there were few tucks to let down in the hem of Rosamond's garments when she realized the inutility of her "purple jar"—so we fear that the warning of the Chicago chemist will avail but little, and that the words of parental wisdom will accomplish less, for youth will have its fling, and its soda too, and we must realize that even were there death in the cup the result would be the same, and the child and the nickel would be soon parted.

VISCERAL SYPHILIS.

AT the recent meeting of the American Medical Association at Saratoga the discussion of Dr. Stockton's paper on "Syphilis of the Liver" brought out opinions from many prominent men as to the significance and importance of visceral syphilis in internal medicine. Such excellent clinical authorities as the reader of the paper and Dr. Osler were decidedly of the opinion that visceral syphilis often remains unrecognized, to the discredit of the physician and the serious detriment of the patient. Dr. Osler said that the state of affairs as regards visceral syphilis is not unlike that which obtains for cerebral syphilis. When a practitioner says that he has not seen a case of cerebral syphilis for ten years it means that he has not recognized a case for ten years.

The neurologists have been the object of no little obloquy because of the well-recognized tendency among them to assume the existence of syphilis whenever there are serious signs of degeneration in the nervous system and no other readily discoverable cause therefor. It would seem, however, that perhaps the obloquy is due rather to the general practitioner who has refused to see the possibility of the existence of syphilis as the basis for obscure abdominal symptoms and so has missed the opportunity for brilliant therapeutic results in some cases that have proved absolutely obdurate to all other treatment. In the opinion of all who took part in the discussion at Saratoga, every year many cases of visceral syphilis fail to be recognized in this country and some of them come to a fatal termination because of consequent failure to try the therapeutic test of thorough and continued syphilitic treatment.

This is a serious and unfortunate state of affairs, for the most encouraging department of therapeutics in internal medicine is the use of specifics for syphilitic lesions. Pathological conditions that seem to be of the most serious kind and that simulate inevitably progressive affections hopelessly obstinate to treatment melt away under the specifics and the patient is not only relieved of serious symptoms but restored almost miraculously, it would appear, to good health.

Syphilis of the liver is apt to simulate two very serious conditions—alcoholic cirrhosis and cancer of the stomach or of the liver itself. As Dr. Osler stated, the risk of confounding alcoholic and syphilitic cirrhosis of the liver is much greater than has been imagined, because the patient with a history of abuse of alcohol is not unlikely to have also a history of syphilis. If the history of indulgence in liquor is learned at once, the question of syphilis may entirely escape the practitioner's mind. The ascites, jaundice, Godolphin facies and other characteristic symptoms of alcoholic liver cirrhosis may very well be present in a case of syphilis of the liver. The liver is usually enlarged in syphilis, but this may be hard to determine in the presence of a large ascites, and the diagnosis of alcoholic cirrhosis may be definitely made without a suspicion of the existence of syphilis as a causative factor in the case being aroused. Needless to say, the mistake is a serious one for the patient, for the symptoms of syphilitic liver cirrhosis are promptly relieved by specific treatment.

With regard to the confusion of cancer of the abdominal organs and gumma there is abundant evidence. Not only is this true of syphilis of the liver, but of almost any of the abdominal viscera. In recent years not a few needless laparotomies have been performed for gummata of the stomach and various parts of the intestinal tract. Antisyphilitic treatment should always be tried when abdominal growths of any kind are present. No possible harm can result from the judicious employment of mixed treatment for a few weeks. The delay is not sufficient to make the prognosis of any subsequent operation that may be determined on much worse. The possibilities of benefit are very great. In this matter certainly the experience of the neurologists should be a source of encouragement, for scarcely a week passes without the report of almost unhoped-for relief from severe nervous conditions in cases in which the history gave no prospect of any such satisfactory result.

The absence of a syphilitic history by no means disposes of the question of syphilis in the case. Not infrequently genital chancres and the secondary symptoms that follow give so little annoyance that they scarcely attract the patient's attention. Extragenital chancres are frequent and often remain unrecognized.

In a series of cases of general paralysis in Vienna in none of which a syphilitic history could be obtained Lange and Redlich showed that symptoms of undoubted tertiary lesions of syphilis could be demonstrated in the bones and other tissues of the patients in about 60 per cent. of the cases. As pointed out by Dr. Osler, the existence of symmetrical nodes on the tibia is one of the most helpful signs, though the occurrence of

tertiary cutaneous lesions of syphilis may suggest the diagnosis.

This whole subject of visceral syphilis is of great practical importance. The announcement of a paper on syphilis of some special abdominal organ is apt to produce the impression in the general practitioner's mind that this is not meant for him but for the specialist in syphilology. As a matter of fact, the treatment of all manifestations of syphilis belongs to the family practitioner, who can alone prove the proper guardian of family and personal health during the many years the disease may produce serious effects. Syphilis is undoubtedly becoming more frequent in this country than formerly. The necessity for suspecting its presence as the basis of fever of obscure origin, of hepatic conditions of many kinds and of intra-abdominal as well as nervous symptoms of the most varied description, is therefore more insistent upon the practitioner. It is no credit to suspect and determine the presence of syphilis, but it is a sad disgrace to overlook it, as happens, it would seem, only too frequently under present conditions.

ECHOES AND NEWS.

NEW YORK.

Ophthalmia Prevalent in New York.—New York city is paying the penalty for its dirty excavations and the soft-coal nuisance. In an examination of 2,000 children in the public schools over 18 per cent. were found to be suffering from ophthalmia.

Tuberculosis Crusade in New York.—The Charity Organization Society has begun a crusade against tuberculosis. A Committee on Prevention of the disease, consisting of eleven physicians and thirteen laymen, has been appointed by the society. A secretary who shall devote his time to the committee is to be appointed. The entire volunteer body of workers and the expert agents and visitors of the society will contribute to the objects which it is desired to accomplish. The committee consists of the following: Dr. Hermann M. Biggs, Dr. Joseph D. Bryant, Dr. J. H. Huddleston, Dr. E. G. Janeway, Dr. S. A. Knopf, Dr. T. Mitchell Prudden, Dr. Andrew H. Smith, Dr. E. L. Trudeau, Dr. Egbert Le Fevre, Dr. Henry Herbert, Dr. W. G. Thompson, Dr. Ernst J. Lederle, Homer Folks, Prof. F. H. Giddings, Charles F. Cox, Edward T. Devine, Eugene A. Philbin, Robert Hunter, Herbert S. Brown, Mrs. James E. Newcomb, Mrs. Frederic S. Lee, Miss A. B. Jennings, Miss Ella Mabel Clark and Miss Lillian D. Wald and Robert W. de Forest and Otto T. Bannard, ex officio. The methods of work adopted by the new committee will be similar to those employed by the Tenement House Committee. In addition to an investigation of the social aspects of tuberculosis the work of the committee has been outlined in part as follows: The promulgation of the doctrine that tuberculosis is a communicable, preventable and curable disease; the dissemination of knowledge concerning the means and methods to be adopted for the prevention of tuberculosis; the advancement of movements to provide special hospital, sanatorium and dispensary facilities for consumptive adults and scrofulous and tuberculous children among the poor; and the initation and encouragement of measures which tend to prevent the development of scrofulous and other forms of tuberculous diseases.

PHILADELPHIA.

Reception to Dr. Rixey.—The Medical Club of Philadelphia gave a dinner June 14th to Dr. P. M. Rixey, Surgeon-General of the Navy. Following the dinner, which was presided over by Dr. E. L. Duerfaud attended by several of the naval officers at League Island in addition to a half dozen physicians, came a public reception at which over seven hundred physicians paid their respects to Dr. Rixey.

Country Branch for Rush Hospital.—The Rush Hospital for Consumptives has recently opened its country branch at Malvern under the most auspicious circumstances. The farm comprises 47 acres; there are seven buildings, two of which have been refitted according to modern methods. The farm will furnish supplies for both institutions. One house at Malvern will be fitted with a large sun-parlor and kept open during the winter.

Wants Municipal Hospital at Blockley.—Dr. J. V. Shoemaker, President of the Department of Charities and Corrections, has suggested to the city authorities a plan for the construction of a municipal hospital in connection with the Philadelphia Hospital. The plan includes the removal of the almshouse and insane department to some isolated portion of the city, probably Petty's Island in the Delaware River. This plan has been evolved to meet the objection that is raised from every locality considered as a location. The grounds mentioned are away from residence and easy of access.

CHICAGO.

Resignation of Dr. Gehrmann.—After ten years' service as director of the laboratory of the Chicago Health Department, Dr. Adolph Gehrmann has resigned and will take complete charge of the hygienic and bacterial departments of the Columbus Medical Laboratory.

Medical Alumni Reunion.—The Northwestern University Medical School has arranged for a reunion of its Alumni during the week of June 16th to 21st. Between four and five hundred have signified their intention to attend. Every day, from eight in the morning until six in the evening, clinics, dispensary demonstrations, hospital visits, amphitheater operations and college lectures will be given. The alumni banquet will be held at the Auditorium, June 17th, the thirty-sixth annual meeting of the Alumni Association in Davis Hall, June 18th, and the commencement exercises at the Auditorium, June 19th.

Investigation of Chicago Hospitals.—The results of the first day's inspection of local hospitals by the City Building Department shows the necessity for continuing the investigation until every institution of this sort in the city has been thoroughly examined. The inquiry into conditions at the Washingtonion Home on the West Side revealed several things which should not be permitted to exist. This institution is a home for inebriates, something after the order of the St. Luke Society Sanitarium, recently destroyed. Patients who are violent are confined on the third floor, in windowless rooms, the walls of which are lined with wood. The doors are of heavy wire and securely locked. In this part of the institution there are no fire-escapes, as the building is only three stories high. The main building, fronting on Madison Street, has no elevators, and the fire-escapes have been declared to be faulty by the inspectors. In case of fire, the attendants are expected to unlock the doors of patients' rooms, and then the patients may es-

cape by the stairway or through a hatch in the roof. Twenty persons are now confined in this institution. Now that these facts have been presented to the proper authorities, it is hoped they will not wait for another probably fatal fire to compel the making of needed changes not only in the Washingtonian Home, but wherever else defects or improper management may be found. No hospital or sanitarium should be overlooked in this inspection. The investigation should be of the most searching kind, and the necessary reforms must be made with the least possible delay. The practice of keeping helpless or violent patients who have to be locked up on any floor higher than the second in these hospitals is to be condemned. The hospital ordinance should govern this important matter. Patients of this character should be placed where they could be rescued most readily in case of fire. In every other particular the hospitals should conform strictly to all the requirements of the Building Department.

Medical Instruction.—Dr. M. J. Seifert read a paper on this subject before a recent meeting of the Chicago Medical Society. He offered several propositions for consideration, and among them the selection of professors, entrance requirements, draft of the curriculum, conduct of medical instruction, and the selection of professors. He believes that no professor should be engaged except for scientific, personal and pedagogical fitness. He said it was surprising to notice with what utter disregard for teaching ability a professor is chosen. The true teacher must possess enthusiasm and predilection for his professional career, and for the subject taught, combined with talent, a clear and logical mind, good memory, keen perception, endurance, and determination to succeed. The qualities of the ideal teacher should be, in addition to those enumerated, physical strength, a physique free from deformities, and a large heart which will supply the necessary patience born of that magnanimous spirit which revels in the dissemination of knowledge at once scientific, practical and moral. Furthermore, the true teacher must have the ability to impart knowledge logically, always giving a complete presentation of his subject wherever possible, with due regard for all correlated branches of learning. This presupposed a thorough mastery of the subject taught, reënforced by a liberal general education.

Entrance Requirements.—A broad, liberal training is a *sine qua non* for successful medical work. At present one sees too many untrained minds in classes. It is astonishing to find how frequently students come without the slightest idea of the biological sciences, without the slightest knowledge of fundamental subjects, when, as a matter of fact, the medical course ought to be an extension of their previous physical, chemical and biological work. The problems of medicine are so complex that without sufficient preliminary training they cannot be attacked. A good preliminary training insures a good command of literary expression. This should be a five-year course. This seems very necessary to insure a steady, even assimilation of studies. In the present arrangement there is too much pressure, and the results are anything but satisfactory. What students need is time to think and observe independently. They are literally dosed with pages upon pages of reading and hours upon hours of lectures without being able to stop long enough to study the subject-matter carefully and to digest it thoroughly. Another great problem is physical culture for the medical student. A definite and regular system of physical culture should be made obligatory for each student. This is especially to maintain the physique of the student. No professor should be permitted to give a lecture course unless (*a*) he has something to offer that cannot be found in the text-books, except if by his force and personality he can instil life into the subject; (*b*) unless he can command the willing, spontaneous attention of his class by his individuality, style of delivery, and powers as a disciplinarian; (*c*) or unless he can present his subject in a clear succinct manner.

CANADA.

Medical Society of Nova Scotia.—The next annual meeting of the Medical Society of Nova Scotia will be held at New Glasgow on the 2d and 3d of July. Dr. John Stewart of Halifax is the Secretary, he having been chosen for that office rendered vacant through the lamented death of Dr. W. S. Muir, who for so many years discharged the duties of Secretary.

Militia Medical Course.—A course of instruction for Canadian militia medical officers has commenced at Ottawa with Surgeon-Major Gorrell of that city in charge who will deliver lectures every day. The following have registered for the course: Drs. Moorhouse and Watt of Winnipeg; Dr. Sands, Kingston; Dr. Hill, Montreal; Drs. Gardiner, McCarthy, Birkett, Williams and Shillington of Ottawa.

New Appointment at McGill University.—Dr. R. F. Ruttan, for eleven years Registrar of the Medical Faculty of McGill University, has resigned from that office, and has been appointed Professor of Chemistry in succession to Dr. Girdwood.

Appointments for Rockefeller Fellows.—Dr. W. M. Ford appointed Rockefeller fellow in bacteriology at McGill a year ago, has recently been appointed one of the investigators at the Rockefeller Institute at New York. The Medical Faculty of McGill will have the choice of his successor. Dr. P. G. Woolley, fellow in pathology at McGill University, has been appointed bacteriologist to the United States bacteriological laboratories at Manila.

Kingston Medical Society.—The following have been elected officers of the Kingston Medical Society for the ensuing year: President, Dr. W. T. Connell; Vice-President, Dr. Forster; Secretary, Dr. Mylks.

New Superintendent for Montreal General Hospital.—The Medical Superintendent of the Montreal General Hospital, Dr. E. M. von Eberts, will leave that institution on September 1st, after a service of many years. He will be succeeded by Dr. W. G. Turner, the senior house surgeon, who ever since his graduation from McGill University two years ago has been connected with the General Hospital.

Changes in Ontario Asylum Officials.—Dr. Reynolds, Assistant Superintendent at the Asylum for Insane, Hamilton, died recently at Baltimore, and as a consequence several changes have been rendered necessary in the staffs of the various asylums in the Province. Dr. Beemer, Assistant Superintendent of the London Asylum, has been made assistant at the Hamilton Asylum. Dr. Bell of the Toronto Asylum has been transferred to London, and Dr. J. C. Mitchell, Enniskillen, has been appointed Dr. Bell's successor at Toronto. Dr. Mitchell is the president-elect of the Ontario Medical Association.

New Medical Staff, Royal Victoria Hospital, Montreal.—The following fifteen new appointments have been made to the house staff of the Royal Victoria Hospital at Montreal to run to August 31, 1903: Admitting officer, Dr. A. G. McAuley; medicine, Drs. Colin K. Russell, W. W. Francis, J. R. Byers, J. C. Colby; surgery, Drs. E. Penner, E. J. Mullailey, J. D. Dixon, J. L. D. Mason; ophthalmology and laryngology, Dr. Newbold C. Jones; gynecology, Dr. James R. Goodall; anesthetist, Dr. L. C. Harris; locum tenens, Drs. Herman K. Stockwell and J. A. MacKnaughton; externe in medicine, Dr. F. C. L. Cantlie.

Maritime Medical Association.—The approaching annual meeting of the Maritime Medical Association at Charlottetown, P. E. I., on July 9th and 10th promises to eclipse all other previous meetings. Amongst others who will contribute papers are: Dean W. B. Geikie of Trinity Medical College, Toronto; G. Clowes Van Wart, Fredericton, N. B.; J. C. Houston, Souris, P. E. I.; R. Macneill, Charlottetown; T. J. F. Murphy, Halifax; Andrew Halliday, Halifax; E. A. Kirkpatrick, Halifax; M. Chisholm, Halifax, and C. Dickie Murray, Halifax.

A Medical Library for Halifax.—The medical profession in Halifax proposes to have space for medical books in the new Public Library shortly to be erected in that city through the generosity of Mr. Carnegie. The late Dr. Charles Cogswell of New London, N. S., left $5,000.00 to the Medical Society of Nova Scotia, the interest on which is to be applied toward maintaining a library for the medical profession in that Province. The Halifax Medical College has lately received several donations of books and medical journals and it is proposed to form a committee of the College and of the Medical Society to carry the project to a successful completion.

Ontario Medical Association.—On June 4th and 5th the Ontario Medical Association held its twenty-second annual meeting in the city of Toronto. Dr. Newton Albert Powell, Toronto, presided. The meeting was one of the largest ever held by the Ontario Medical Association, nearly two hundred physicians being in attendance from different sections of the Province. One of the most interesting discussions of the whole meeting arose over the paper of Dr. Davison with regard to examinations for life insurance. The medical men seemed to be of the unanimous opinion that the life companies did not pay enough for the examinations. Dr. Davison, as medical director of a large old line company, deprecated the careless examinations often sent in to be passed upon, and emphasized the importance of examiners sending a private letter to the medical director which would always be held strictly confidential. After a long experience the companies had found it would be better for the examiner to give the examination paper to the agent and not send it direct to the head office. Dr. Davison gave some interesting statistics culled from United States and Canadian reports showing the large amounts medical men were drawing from the companies for life assurance examinations.

Annual Presidential Address.—Dr. Powell dealt chiefly with recent medical legislation in the Province of Ontario and the Dominion measure for a Medical Council which has been so successfully promoted by Dr. Roddick, M.P. He said that he had felt called upon as President of the Association to oppose the Jessop bill before the last legislature which sought to reform the Ontario Medical Council and do away with the Homeopathic representation in that body. As the Homeopaths had given up certain rights and a mutual agreement arranged with them years ago, he did not consider it fair dealing to wipe out their representation unless with their own consent. The parliamentary success of the Dominion Medical Council bill was assured, but he thought the measure had been so emasculated that it would not be of great weight either for good or evil. Dr. Powell also touched upon some matters of medical ethics.

Officers Ontario Medical Association for 1903.—President, J. C. Mitchell, Enniskillen; Vice-President, George A. Bingham, Toronto; Secretary, Harold C. Parsons, Toronto; Treasurer, Andrew R. Gordon, Toronto.

GENERAL.

Louisiana State Medical Society.—The next meeting of the Louisiana State Medical Society will take place in New Orleans April 23-25, 1903. The officers are as follows: President, Dr. Isadore Dyer; Recording Secretary, Dr. W. M. Perkins; Corresponding Secretary, Andrew G. Friedrichs, M.D., New Orleans.

Egyptian Medical Congress.—This, the first Egyptian congress, will be held at Cairo, December 19 to 22, 1902, under the patronage of the Khedive. The scientific program is supplemented by numerous social features, including specially-arranged trips up the Nile.

A New Prize.—At the International Medical Congress of 1903 it will be proposed to use the surplus of 40,000 francs from the last International Congress held in Paris as a fund for a prize to be awarded every three years at future Congresses.

International Congress for the Care of the Insane.—This Congress, which will especially consider the family care of the mentally diseased, will be held in Antwerp September 1 to 7, 1902.

Malaria in Italy.—The experiments in prevention of malaria by the railroad companies of Italy for the protection of their personnel in malarial districts have been most successful. Prophylactic measures were the wearing of metallic masks and veils and the distribution of quinine in pills or confetti. In Sardinia the 60 individuals so protected were entirely free from the disease. In Venice but 9 per cent. of protected individuals were affected with malaria, as against 60 per cent. in non-protected. Like favorable results were reported from all the districts controlled.

Sanitary Laws of Holland.—The Dutch law which requires the placing of a notice upon every house in which there is an infectious disease was strictly adhered to in the case of Queen Wilhelmina. At the palace of Loo the card indicating a case of typhoid was placed upon the wall of the palace near the lodge of the concierge, its removal following thorough disinfection of the premises.

Ninth International Congress for Prevention of Alcoholism.—As decided at the last Congress held in Vienna, the Ninth Congress will meet in Bremen, April 14 to 19, 1903.

Electric Light.—According to the opinion of a Russian physician, electric light is the least injurious to the eyes. He states that the more frequently the eyelids are closed ("winked") the greater the fatigue to the eye. This assertion is based upon experiments which showed that winking occurred by candle-light 6.3 times per minute; by gas-light 2.8; sun-light, 2.2; electric-light 1.8.

Cholera in the Philippines.—It is confidently expected that a modern mode of dealing with this scourge now ravaging these islands will be devised by the American physicians there in charge.

American Surgical Society.—The following officers have been elected for 1903: President, Dr. M. H. Richardson; Vice-Presidents, Drs. M. B. Carson and W. F. Mayo; Secretary, Dr. D. P. Allen; Treasurer, Dr. G. R. Fowler; Recording Secretary, Dr. R. H. Harte.

American Gynecological Society.—The following new members were elected at the recent meeting of this Society: Dr. George Henry Noble, of Atlanta, Ga.; Dr. Brooks H. Wells, of New York; Dr. Carlton C. Frederick, of Buffalo.

Obituary.—Dr. Edward N. Whittier died in Boston last week, after a brief illness. He was born in Gorham, Me., July 2, 1841. He entered Brown University in 1858 and graduated in 1862. He served in many campaigns and battles with the Army of the Potomac. At the close of the war he went to Boston and entered the Harvard Medical School, graduating with the class of '69. He was an instructor at the Harvard Medical School for many years.

Dr. Algernon Sidney Leonard, who died recently at his home, 131 McDonough Street, Brooklyn, in his sixtieth year, had been in practice for thirty years. He was a son of the late Moses G. Leonard of New York, a well-known politician. He leaves a widow and three daughters.

Passed Assistant Surgeon of the Navy Frederick Horner, Jr., died at Marshall, Va., as the result of a runaway accident. Dr. Horner had been on the retired list longer than any other medical officer and longer than any officer in the service, with one exception. He entered the Navy from Virginia as an assistant surgeon in May, 1851, and was retired in May, 1861, on account of incapacity for sea service.

Dr. Hallock R. Maine, of Brooklyn, died of pneumonia June 13th. He was thirty-seven years old and for several years had been visiting physician at the Kings County Hospital. He was a member of the New York State and Kings County Medical Associations. He leaves a widow and one son.

Selden H. Talcott, A.M., M.D., Ph.D., died last week, at his home in the State Hospital in Middletown, N. Y., of bowel and stomach troubles, with which he had been critically ill for three weeks. Dr. Talcott was born in Rome, N. Y., in 1842, and was graduated at Hamilton College in 1869. He entered the New York Homeopathic Medical College in 1870 and was graduated in 1872, being first in a class of thirty-six. In 1875 he received the appointment of chief of staff in the Homeopathic Charity Hospital on Ward's Island. He was also in charge of the medical division of the Soldiers' Home and also of the Inebriate Asylum in New York city. In 1877 he was appointed Superintendent of the State Hospital in Middletown, N. Y., which post he held at the time of his death. He was a member of the faculty of the New York Homeopathic Medical College as professor of nervous and mental diseases, and for four years lectured on these diseases at Hahnemann Medical College, Philadelphia. He was a member of several medical societies in this and foreign countries. He had travelled extensively and made a study of asylum management in Scandinavia, Great Britain and Germany, visiting from forty to fifty asylums in 1891.

Dr. George F. Carey died Tuesday, June 17th, in New York, following an operation for Bright's disease. He was sixty-six years old and was a specialist in diseases of the eye and ear. He was a graduate of the College of Physicians and Surgeons, and had been attached to the staffs of St. Francis, the Manhattan Eye and Ear and the New York Foundling hospitals.

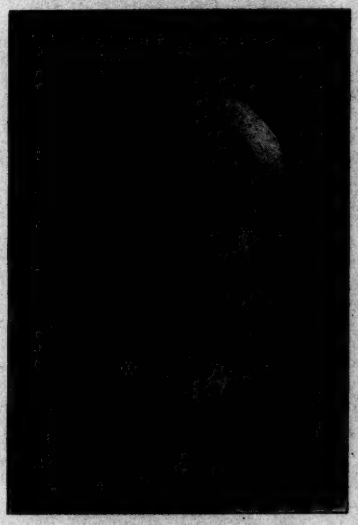
SPECIAL ARTICLES.

BANQUET TO DR. STERNBERG.

IT was a highly representative body that gathered last Friday evening, June 13th, at Delmonico's in New York to do honor and to pay homage to the retired Surgeon-General of the Army, George M. Sternberg. Representative practitioners of the East and the West, of the North and the South were present, and the occasion was a most enjoyable one.

Dr. E. G. Janeway, in his introductory remarks, first read a telegram received from Major-General H. C. Corbin, in which he offered congratulations to Dr. Sternberg and his sense of appreciation of duty well done. Further, in speaking of Dr. Sternberg and of his long life and many years of activity, Dr. Janeway remarked that on being retired at the age of sixty-four it could well be said that Dr. Sternberg did not retire on any grounds of insufficiency; he was not responsible for the date of his birth, and it was by an act of Congress only that he was forced to give up this particular line of activity. He expressed the hope, however, for this illustrious student of bacteriology, fellow of the American Association of Hygienists, Commissioner on the Study of Yellow Fever, author and worker, that many years would be left him in which he could carry on his work. Dr. Janeway said that it was a matter of pride for the American physician to point out the long list of achievements and attainments of their illustrious guest, which bespoke such a high mental endowment and was an evidence of work well done.

In response to this toast General Sternberg said: "Words fail me in which to express my high appreciation of the compliment you have paid me by making me your guest of honor upon this occasion. Such a compliment, coming to me from the leading members of the medical profession at a time when by the operation of law I have reached the end of my active service as a medical officer of the Army, is especially gratifying. Accepting this testimonial as evidence of your approval of my efforts for the promotion of medical science and of the interests of the Medical Corps of the Army, I thank you one and all most sincerely. At the same time I feel that the results accomplished have



SURGEON-GENERAL GEORGE M. STERNBERG (Retired.)

fallen much below my earnest desires and perhaps have not been commensurate with the opportunities I have had.

"My first feeble efforts in the field of investigation which has always presented the greatest attraction for me—the etiology and prevention of infectious diseases—were made at a time when no one in this country was prepared to give me instruction in methods of research and I was to a large extent thrown upon my own resources. The tubercle bacillus, the typhoid bacillus and many other well-known pathogenic micro-organisms had not yet been discovered and a most promising field of investigation was presented to my view, for I was strong in the belief that infectious diseases must be due to infectious agents capable of self-multiplication—*i.e.*, to living disease germs. It so happened that the principal problem which I was called upon to solve was one of the most difficult that has engaged the attention of investigators, and one in which bacteriological methods have proved to be of no avail except in establishing a negative proposition—*i.e.*, that yellow fever is not due to

a micro-organism of this class. The time and persistent work devoted by me to an investigation of the etiology of this disease might have given more fruitful results if my attention had been turned in some other direction, but while I met with a serious disappointment in my failure to discover the yellow-fever germ, I have the satisfaction of knowing that my researches cleared the way for the subsequent demonstration by Reed and his associates of the method by which this disease is transmitted from man to man. From a practical point of view this is all we require to guide us to a successful measure of prophylaxis, as has been recently demonstrated in the island of Cuba.

"But I must not occupy your time by further reference to this portion of my life work. For nine years I have scarcely looked through a microscope, my time having been fully occupied by the important duties entrusted to my charge as Surgeon-General of the Army. While I have not been able personally to prosecute any researches having in view the advancement of medical science, it has been a source of great satisfaction to me that I have been able to provide the means and appliances for other medical officers of the Army to do so. When I commenced my research work I had to provide my own microscope and material of all kinds. There not only was no bacteriological laboratory or apparatus at any military post, but so far as I am informed none at any medical school or university in the country. At present we have a thoroughly equipped laboratory in connection with our Army Medical School in the city of Washington, at all of our general hospitals in this country and in the Philippines, and also at every military post of any importance throughout the United States. We also have a considerable number of medical officers who have been instructed at the Army Medical School, who are well prepared to take advantage of their opportunities for research work.

"The Medical Corps of the Army is to-day in a high state of efficiency and I am proud to have been the chief of this *corps d' elite* during a period when its efficiency and usefulness had been put to so severe a test. The profession, also, has reason to be proud of its members who are attached to the military service of the country. Our senior surgeons have been called upon to fill positions of great trust and responsibility during the past four years and have, as a rule, acquitted themselves with great credit. As chief surgeons in the Philippines, in Cuba and in Porto Rico, they have been to a large extent responsible for the administration of the affairs of the Medical Department and have been called upon not only to protect our troops from the ravages of infectious diseases, but to perform a similar service for the natives of the various islands in which American soldiers have been called upon to serve. In all of these islands we found smallpox to be widely prevalent and in all it has been practically stamped out. In Cuba yellow fever was a scourge which threatened to do us greater injury than the bullets of our foes. But thanks to Reed and his colleagues on the Board sent to study this disease, we now know how to prevent its extension and have practically stamped it out in the city of Havana, which has for many years been its principal endemic focus in the West Indies. In the Philippines bubonic plague has been kept in check by the strenuous exertions of our medical officers and the latest reports indicate that it has almost disappeared from the city of Manila. Unfortunately, Asiatic cholera has recently gained a foothold in Manila and the neighboring provinces. Colonel Maus, who is at present acting as Commissioner of Public Health, is fighting this scourge with every means known to science and hopes to be able to avert a serious epidemic.

"Time will not permit me to dwell further upon the achievements of our medical officers during and since the Spanish-American war, but I make bold to say that as sanitarians, as surgeons, as all-round practitioners of medicine, and as scientific investigators, we have in our ranks many medical officers who are an honor to the Corps and to the profession.

"I also point with pride to our general and post hospitals. The general hospitals at the Presidio, at Fort Bayard, at Washington Barracks, and at the Hot Springs, Ark., are models which bear comparison with the best civil or military hospitals in any part of the world. The same is true of our principal hospitals in the Philippines. In this country nearly every military post of any importance has a modern hospital well adapted to the requirements of the military service, provided with a well-equipped laboratory for clinical and research work, and an operating room which would be regarded with satisfaction by any surgeon accustomed to the precautions necessary for successful aseptic surgery.

"When I look back for forty-one years to the time when I entered the Army as an assistant surgeon and consider the great advancement in scientific medicine since that day, and the superior facilities which now exist for rendering efficient aid to the sick and wounded of our army, I cannot help regretting that I knew so little then and that now I have reached the end of my active career and, like an old work-horse, am turned out to graze at a time when the results of medical and surgical practice are so much more satisfactory. On the other hand I confess to a certain feeling of exhilaration and a disposition to kick up my heels at the thought that I am my own master and can graze in such fields as suit me best. One of my oldest and best friends, now seated at this table, will remember when at the mature age of nineteen years we left our rural homes in Otsego County for the purpose of teaching the young idea how to shoot in the New Germantown Academy in the State of New Jersey. When I graduated in medicine at the College of Physicians and Surgeons in this city my ambition did not extend beyond the hope of securing a living practice in the country. My first venture was at a little town on Long Island, where a vacancy was supposed to exist, owing to the recent death of an old and highly-respected physician. Apparently, I was not able to fill this vacancy, for my professional shingle was displayed for several months and I did not receive a single professional call. Not being appreciated in this conservative neighborhood I moved my base of operations to Elizabeth City, New Jersey, and was getting a little practice when the war tocsin sounded and my future career was determined by the favorable verdict of an Army Medical Examining Board as to my qualifications for duty as an army surgeon. Within three months I was engaged in infecting gunshot wounds with dirty fingers and unsterilized cold-water dressings, and in amputating the legs and arms of unfortunate soldiers who had sustained gunshot fractures in the disastrous battle of the first "Bull Run." We were all blissfully ignorant of pathogenic micrococci and bacilli in those days, but having had Willard Parker as my professor of surgery, and Sands as demonstrator of anatomy, I was not entirely unprepared for the responsibilities of the battlefield.

"It would perhaps have been more profitable if I occupied the time at my disposal upon this memorable occasion in speaking in some detail of the advancement of medicine and surgery since my student days; but most of you are better qualified to discuss this interesting topic than I am, and I am sure you will pardon me if my remarks have been more or less personal and

reminiscent in character. I find it hard to realize that the country youth of my name who came to this city as a student of medicine in 1858 is here to-day as the honored guest of leading members of the medical profession in the United States, whose names are as household words wherever students of scientific medicine are assembled.

"I thank you, gentlemen, again and most sincerely for this kind testimonial of your esteem. Your endorsement of my life work is of more value to me than military honors or financial competency. I have at times felt discouraged and disposed to think that I have fallen far short of what might reasonably have been expected in view of my opportunities. But it is reserved for the very few to accomplish great things and the physician who has won the esteem of those of his profession who are best qualified to judge of his work may well be satisfied, although he realizes that he has but a small share in promoting the advancement of scientific medicine and the interests of our beloved and humane profession."

Dr. Alexander H. Smith, in response to the toast "The United States Army," said that its work spoke for itself. He had been struck, he said, with the parallelism in the career of Dr. Sternberg and of his own. Both were from New York State, both graduated from the College of Physicians and Surgeons, both settled in New York State to practise and thence both moved to New Jersey; and finally, at the call to arms, both entered the Army, where their paths diverged very widely. Dr. Sternberg was sent to New Mexico, and for three years was busy holding on his scalp. The Comanches, the Apaches and the Navahoes were to his west, and frontier warfare was being carried on incessantly. It was at Fort Ellsworth in Kansas that he met Dr. Sternberg for the first time, and he well remembers his hospitality in the little dugout in which he then lived, and has been proud to claim him as a friend from that time.

He himself had been successful among the Arapahoes and Cheyennes in keeping his own scalp on. Out there, face to face with the savage foe, the American soldier taught the Indian object lessons, and they then learned that an unscalped Indian is only a half-dead one, so they scalped him to be sure. He said that at the present time there was not a hostile Indian within the borders of the United States. They had been compelled to learn their lesson, and had become a responsible people. Dr. Smith suggested that a mental parallel might be drawn which would be of service in modern times.

He had watched the career of General Sternberg, and had shared in his honors; and throughout the Spanish War had felt great pride in his achievements. He had seen that the medical department was not second best, but first best, notwithstanding all the drawbacks; the results were more satisfactory and the criticism less than in any other department of the service, and Dr. Sternberg then and there demonstrated that a medical man might have executive ability outside his own lines.

Colonel Lippincott spoke of himself as being a frontier man, at the present time being stationed at Governor's Island and feeling even more in the backwoods than ever. He said that the army and his own corps all gravitate toward General Sternberg; their respect and love reach out in his direction. At the present time there is an army of 66,000 men, which before had numbered more than 100,000 men. But so far as the Medical Department was concerned five corps were ready for active campaign service. The work that Dr. Sternberg had done, finding ten years ago the miserable old stuff left from the Civil War, in remodeling and reconstructing the corps so thoroughly and fundamentally, was a matter to be proud of, and one is proud to have such a medical man in the army; one honors the man who made it possible and owes him a debt of gratitude.

Speaking on the subject of the work of the "Army in Cuba," Dr. William Osler of Baltimore said that it was a happy expression, "Peace hath her victories no less renowned than war." The Spanish war, he said, afforded an illustration not of prize-fighting, but of a great big giant pomelling a puny citizen affected with general paresis or Parkinson's disease; it was not a fight, he said, it was a walkover. But there was another thing, and a totally different thing; another foe, worthy of the best of America's steel; and no chapter in the history of medicine will be able to stir the blood of the American profession as that which will tell of the battle with that foe, yellow fever. He said it was a noble tale from the earliest history when Matthew Carey, of Philadelphia, in 1793 first took up the work. Throughout the early history of medicine one reads the work of Rush and of Carey and the host of others who fought that foe. It had always been the same story in the Gulf States, the soul-stirring history of the men who had laid down their lives in the struggle with this mighty adversary. Here was the foe that General Sternberg had fought and had vanquished; his name would go down to posterity with the honor of a battle long fought and valorously won. The victory, Dr. Osler said, was accomplished in a way that reflected great credit upon the army and upon the medical profession. The work of Reed and Carroll was a piece of work well planned and well carried out, a demonstration to the entire world.

That, however, is not all of the story. Tuberculosis, typhoid fever, these are with us still. Never has there been an instant in the history of medicine when with such rapidity an organization had been able to wipe out a scourge. That work had been carried on by Dr. Leonard Wood and Dr. Gorgas.

Dr. Gorgas said that had their work not been as successful as good fortune had made it, General Sternberg would have received the entire blame, the success was his also. When Havana was occupied in 1899, he became health officer in the spring with no very clear idea of what to do and at first he had devoted his attention to organization and development of a sanitary department; work was started in on all lines, good as well as bad, bad as well as good. There was little yellow fever in the spring of that year, but in the fall and winter there was a great deal. In 1900, though the general sanitary condition had immensely improved, the yellow fever was still present and the epidemic was of a severe character. There were over 1,400 cases and 300 deaths, and he felt discouraged at the little progress made. In 1900 Dr. Reed, Chief of the Bureau, first directed work along the lines of the theory of the mosquito infection, and he proved, as history now so well knows, that the mosquito can be infected only during the first three days of the disease, and that there is a period of from twelve to twenty-five days when the bite of the Stegomyia can convey the disease.

In February, 1901, the Sanitary Department was reorganized and turned its attention to study the local conditions and their relation to the spread and development of the mosquito. The rain-barrels, the family cisterns, all breeding the Stegomyia, the Chinese gardens from which came Anopheles, all these were studied in much detail and a large force of 150 men was put to work. There were but few cases of yellow fever at the time, and the mosquitoes of the neighborhood were killed by fumigation, pyrethrum powder proving a very efficient mosquitocide. In January of 1901 the city was free from yellow fever; in July the suburbs received a certain amount of reinfection; but on September 28,

1901, the last case of yellow fever occurred. Since that time the land has been practically free, since Havana has been the center of infection. The success had been due to the study of the mode of propagation, which discovery had been made possible by the enthusiastic coöperation of General Sternberg.

Dr. Janeway then introduced Dr. John A. Wyeth of New York, the retiring president of the American Medical Association. Dr. Wyeth in turn introduced Dr. Frank Billings, of Chicago, the recently elected president.

Dr. Billings said that he did not feel that he could add anything to what had been so well said, but that he desired to speak for the American Medical Association, the representative body of American physicians. It was a great pity, he thought, that this association does not embrace all; the reasons for this are not hard to find, however; it is in part due to the great extent of our country and the relative difficulties in transportation facilities. But these are being steadily overcome, and he hoped the time would come shortly when the entire medical body would be found standing together with all misunderstandings laid aside; that physicians would not be considering each other as doctors, but rather as men and more particularly as gentlemen who were meeting on common ground. When that day should come, and as he saw it it was very rapidly approaching, there would be no difficulty with ethics, and the new organization which had proved so successful under the guiding administrations of Dr. Wyeth and Dr. Simmons would go forward, and the higher standards of professional integrity and scientific research would advance through the broadening and uplifting influences of the American Medical Association.

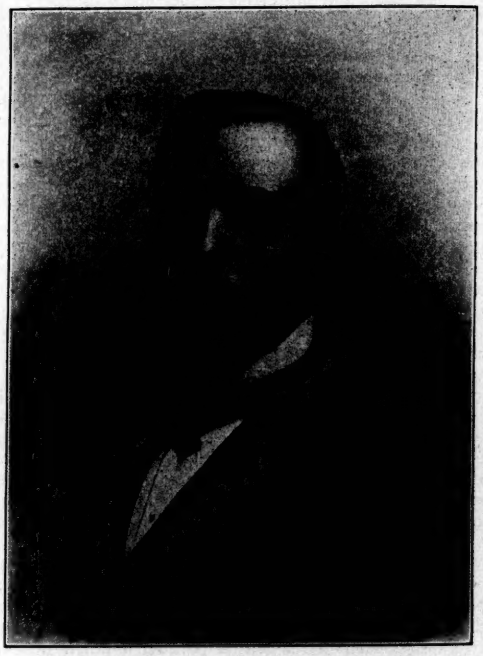
Dr. W. H. Welch of Baltimore spoke of that side of the work of Dr. Sternberg which was most familiar to him, namely, his work in bacteriology. Dr. Sternberg, he said, was the pioneer worker in bacteriology in this country; he had been compelled to acquire the technic from reading, and the entire world knew how he had perfected a technic equal to that of the best. Dr. Sternberg, he said, had made many important discoveries; his work on disinfection and disinfectants would stand as a monument alone. As the first worker to isolate the micro-organism of pneumonia he had gained renown, and his work with yellow fever would stand forever.

He said that it was a common thing, in these busy days, to forget the steps which led up to any important discovery. All that Dr. Sternberg had done in the study of yellow fever was necessary work and it had to be done in just the way that he did it. The ground had first to be cleared; if it were not so the discovery had not been possible, and later discoverers themselves would have had to hunt out the large host of micro-organisms which Dr. Sternberg had described and laid aside. Dr. Welch said that his careful work had practically resulted in the view that a bacteriological origin for this disease could not be claimed, and it was on *a priori* grounds that he himself had felt that Sanarelli's bacillus was not the cause of yellow fever. His study of others' discoveries was most careful, and most critical; it was not wasted endeavor. The problem still remains, however, what the cause is, although the method of eradication has been demonstrated in a most complete and authoritative way. Dr. Welch expressed the wish that Dr. Sternberg would come back to his old love, and to his test tubes, and he welcomed him to many years of fruitful work in a field that had always claimed him as peculiarly its own and one in which honor and renown had been won at home and abroad.

THE NEW PRESIDENT OF THE AMERICAN MEDICAL ASSOCIATION.

Frank Billings, M.S., M.D., was born on a farm in Iowa County, Wisconsin, April 2, 1854. His paternal ancestors were of English decent and settled in New England in 1654. His maternal ancestors were of English decent; they settled in Virginia and migrated with Boone to Kentucky.

Dr. Billings was educated in the common schools of Wisconsin, the State Normal School at Platteville, Wis., and in the Northwestern University. He was graduated from the Chicago Medical College in 1881. He was interne at Cook County Hospital, Chicago, 1881-2; demonstrator of anatomy, Chicago Medical College, 1882-4; student in Vienna, Austria, Berlin, and Paris, 1885-6; lecturer on physical diagnosis, Chicago



FRANK BILLINGS, M.S., M.D.

Medical College, 1887-90; professor of principles and practice of medicine, Chicago Medical College, 1890-98; president of the Chicago Medical Society, 1891; chairman of the Medical Section of the American Medical Association, 1899; professor of medicine and Dean of Faculty, Rush Medical College (in affiliation with the University of Chicago) 1898; Shattuck lecturer, Massachusetts Medical Society, Boston, June 10, 1902; orator in medicine, American Medical Association, Saratoga, 1902. At present he is attending physician to the Presbyterian, St. Luke's and Cook County Hospitals; president of Board of Trustees and attending physician to the Memorial (McCormick) Institute for Infectious Diseases; consulting physician to Michael Rees, Provident, Passavant, and other hospitals of Chicago.

Dr. Billings is known as a man of careful painstaking inquiry. Catholic in spirit and in his sympathies; an interesting and genial teacher, and one who has built up a school of scientists in Chicago who are an honor to the profession, such are some of the attributes of the new President.

SOCIETY PROCEEDINGS.

AMERICAN MEDICAL ASSOCIATION.

Fifty-third Annual Session, Held at Saratoga Springs, June 10, 11, 12, 13, 1902.

SECTION ON PRACTICE OF MEDICINE.

FIRST DAY—JUNE 10TH.

(Continued from p. 1163.)

Graves' Disease and Glycosuria.—Dr. Heinrich Stern of New York described some experimental work and clinical observations on the association between exophthalmic goiter and true and transitory glycosuria. Into the stomachs of a series of patients suffering from distinct symptoms of Graves' disease 75 grams of pure glucose were introduced. In only one of the cases did sugar appear in the urine. Then only 3½ grams were excreted, a transitory alimentary glycosuria probably not more in amount than would be found in many individuals. Of the other 7 patients experimented with not one showed any trace of glycosuria. This proportion, one in eight, is not more than would be found in the same number of patients suffering from chronic gastro-intestinal disturbance; for in many such patients alimentary glycosuria occurs frequently. There are other affections in which some form of glycosuria is much more frequent. For instance in traumatic neuroses 20 per cent. of the patients suffer from it.

Dr. Stern has seen spontaneous glycosuria occur in a case of Graves' disease, but he is inclined to suspect that the presence of true diabetes with Graves' disease is a not impossible combination. He does not think, however, that the association of the two sets of symptoms is always accidental. The occurrence is too common to be merely a coincidence. Both affections may perhaps be considered neuroses, due to some affection of the sympathetic or of the medulla or perhaps of the thyroid gland. The rule is that Graves' disease exists for a long time before the development of the diabetic glycosuria. The combination of affections is practically always fatal. Periods of improvement occur, but they do not last long. At times Graves' disease is latent and gives so few symptoms that it must be looked for carefully. The thyroid causation of the diabetes as well as of Graves' disease seems improbable since Minkowsky has called attention to the fact that extirpation of the thyroid does not cause glycosuria. The cause might be some perverted action of the thyroid setting loose in the circulation some ferment that disturbs the sugar metabolism of the system.

Females Mainly Affected.—Besides two cases observed by himself, Dr. Stern has collected from the literature twenty-two other cases. Of the 24 patients only 2 were males. Graves' disease occurs much more frequently in women than in men, but not in any such proportion as this. Only about four times as many women suffer from the disease as men. The ages at which the affection occurs is from eighteen to fifty-nine years. The average age is about thirty-nine years. Many of these cases occur during the menopause.

Treatment of Combined Diseases.—Dr. Wells of Chicago, in discussing the paper, said that codeine does good for both symptoms-complex, and seems to be the drug to employ. It should be used freely if its effects are to be obtained.

Dr. Allen Jones of Buffalo reported a case in which glycosuria made its appearance after the use of thyroid extract given for the reduction of obesity. This glycosuria has continued ever since except when the patient is on an absolute diabetic diet.

In closing the discussion, Dr. Stern said that glycosuria occurring after the use of thyroid extract is of the type of alimentary glycosuria.

SECOND DAY—JUNE 11TH.

Etiology of Chronic Nephritis.—Dr. A. R. Elliott of Chicago said that chronic nephritis is much less rarely related etiologically to acute nephritis than has been imagined. Even when there is acute nephritis in the history it is important to ask if any nephritic symptoms have been present before the acute inflammation became manifest. Not infrequently acute exacerbations of symptoms occur during the course of a slow-running chronic nephritis and simulate acute kidney trouble. Frequently it will be found that the patient's health before an attack of so-called acute nephritis was not good and has suspicious indications of kidney failure. Arteriocapillary fibrosis—Gull and Sutton's disease—does not enter as much into the causation of chronic nephritis as has been thought.

In Dr. Elliott's opinion the absorption of toxic substances from the intestinal tract plays the most important rôle in the etiology of chronic nephritis. The importance of this is very practically acknowledged by the range of dietetic treatment for the affection. The morning purge, colonic irrigation, and excitation of the intestinal functions generally, lead to prompt amelioration of the nephritic symptoms. On the other hand serious nephritic conditions are ushered in by intestinal accidents. The first symptoms of uremia or of kidney insufficiency are usually noted in the gastro-intestinal tract. The coated tongue, the nausea, the pain in the back, the oxaluria, etc., are all common symptoms of nephritis and intestinal disturbance. After the kidney function is lowered the liver cells degenerate because of the presence of toxic substance, the liver then fails to metabolize substances that come to it and adds its own quota of toxic material to the blood, which still further irritates the kidney. The vicious circle of influence thus formed continually deteriorates the general condition.

Sedentary Life and Hypernutrition.—The inactive life of many city people is undoubtedly a cause for the development of toxic systemic products that irritate the kidneys. Almost inevitably such people overeat and this adds to the manufacture of toxins. In these patients the urine is often quite toxic when injected into animals. The basis of these metabolic disturbances is often an atonic intestinal catarrh. This condition, however, is perhaps itself a manifestation of uremic conditions. Constipation is a very uncertain effect. Though long-continued in some people, it fails to produce any serious systemic effect, while in others its existence for a comparatively short time produces many and even serious symptoms. Coprostasis provides in the material detained in the intestinal tract a very favorable culture-medium for microbes. These not only produce poisons themselves, which are absorbed with serious effects, but they also consume normal food material in the intestines and leave only degradation products to be taken up for the body nutrition. These factors are especially active in the production of chronic nephritis and the realization of this furnishes the best indications for treatment.

Malarial Nephritis.—Dr. Wm. Britt Burns of Memphis, Tenn., described a case of malarial nephritis in which the kidney changes were undoubtedly due to the malarial poison alone. Other organs were also affected by the malarial poison. This case fills up certain lacunæ in Ewing's case in which the malarial parasites were demonstrated in the kidney tissues. The other organs were thrown away in that case and so the characteristic changes of malaria confirmatory of the indications found in the kidneys were not observed. Dr. Burns considers that his case shows beyond all doubt that malaria is a prominent factor in the causation of kidney disease in malarial regions.

Classification of Chronic Nephritis.—Dr. James B. Herrick of Chicago said that no successful classification of chronic nephritis has ever been made. In 1827 Bright did his classic work, letting in the light on the obscurities of kidney disease, but forty years later Rindfleisch declared that the kidneys had attracted the most pathological attention, yet had given least satisfaction. It is now conceded that kidney congestion is not Bright's disease. This suggestion is due to Traube. He and Virchow and Rokitansky also ruled out amyloid degeneration of the kidney from the list of Bright's disease. There remain, however, a series of nephritic affections extremely hard to group and without intermediate members that evoke any hard and fast classification.

Two Chief Groups.—There are two main groups of kidney trouble with clinical symptoms distinct and characteristic pathological changes. The extremes of these two groups are readily differentiated. Chronic parenchymatous nephritis gives readily recognizable symptoms of edema, albuminuria and cylindruria and at autopsy the large, soft, white kidney is found. In chronic interstitial nephritis the urine is abundant, of low specific gravity, with few casts, and at autopsy the small, contracted, or so-called gouty kidney is found. There are, however, combinations of these two pathological processes that evade classification under one or other head. The words parenchymatous and interstitial are always misnomers, as both the secreting substance and the supporting structure of the kidney are affected to some extent at least in both forms. Senator of Berlin, the disciple of Traube and the great German authority on kidney disease, suggested the name chronic diffuse nephritis with or without induration. The pathologist refuses, however, at times to follow even this simple classification. Dr. Herrick says that he has seen Prof. Chiari of Prague more than once refuse to say what form of nephritis he recognized in a kidney at autopsy and state in the report simply chronic Bright's disease, without further qualification.

Intermediate Form of Nephritis.—Dr. Herrick is of the opinion that an intermediate form of nephritis should be acknowledged. Its symptoms develop when the transformation from parenchymatous to interstitial nephritis is taking place. Sometimes this occurs because the parenchyma of the kidney, having become hopelessly degenerated, gradually disappears and an overgrowth of connective tissue occurs. This may be designated by the term suggested by Riesman, secondary interstitial nephritis. Besides this there is still another form due to arteriosclerotic changes.

Diagnosis of Chronic Nephritis.—Dr. A. O. J. Kelly of Philadelphia said there were many diagnostic features of chronic nephritis, but the most important are the albuminuria and the cardiovascular changes. The discussion of extrarenal albuminuria is aside from the purpose of the paper. Functional or cyclic albuminuria must be discussed, however, because it may easily lead to error of diagnosis. Albuminuria with and without kidney changes occurs and has a very definite significance in most cases. As a rule, however, the presence of albumin alone without casts must not be taken to mean too much. It may prove the source of ready diagnostic error.

Physiological Albuminuria.—It is very generally conceded by the best clinical authorities that a true physiological albuminuria may occur. Its subjects are always young and present absolutely no other signs that would call attention to their kidneys. The albumin in the urine is usually found in the course of an examination for life insurance or some health certificate. At times the albumin is continuously present for long periods, more frequently it is intermittent. Postural albuminuria due to the maintenance of a position that favors kidney congestion or the albuminuria that occurs as the result of emotional strain belongs under this head. It is often seen in young persons during the excitement of preparation for examination. It may persist for weeks under these circumstances and then disappear without leaving a trace of damage. Diagnosis may only be made with any degree of assurance if the patient is young and if the amount of albumin is very small, not more than $^1/_{10}$ of one per cent. There must not be accompanying hypertrophy of the heart and there must not be accentuation of the second sound. Genito-urinary conditions that might prove a source of extrarenal albuminuria must be carefully excluded. There should not be serious organic disease of any kind and not more than a few casts and those hyaline in character. The retina should be carefully examined in order to be sure that no traces of retinal nephritic symptoms are present.

The Heart and Vessels.—Hypertrophy of the heart occurs in all forms of nephritis, but not in all cases. In the interstitial form of kidney disease the hypertrophy of the heart occurs early. The heart may become enlarged also in parenchymatous nephritis. The changes that take place in the blood-vessels are more complex. First they lose their elasticity. After this atheroma may develop, but this is not constant. The walls of the arteries become thickened; the inner and middle coats being especially involved in this change. The causes of the alterations in heart and arteries are not well understood as yet. Arteriosclerosis accounts for some of them. This is commoner in this country than abroad and when it occurs is responsible for the changes in the kidney as well as those in the heart. The hypertrophy of the heart is sometimes considered due to the fact that irritant substances allowed to remain in the blood by the failing kidneys cause the capillaries to contract spasmodically and this throws more work upon the motor part of the circulation. The theory of Traube, modified by Cohnheim and Tyson, is probably nearer the truth. They suppose that the heart enlarges compensatorily in order to make up for the failure of elimination through the kidney by increasing blood pressure and so aiding kidney function.

Albuminuria—When Present?—Albumin may be absent for days. It may not be present in the morning urine and yet make its appearance later in the day. It may appear only after exertion or emotion. It may be seen only after the abundant use of proteids. The cardiovascular changes may very well be the most important symptom of the kidney condition. Digitalis may furnish a therapeutic test in certain cases. The albuminuria and casts of kidney congestion will disappear after administration of digitalis. In true nephritis the casts and albumin may be lessened in number and amount, but they do not disappear. In doubtful cases the retinal changes may prove important aids. Their occurrence is always an absolute sign.

Circulation in Bright's Disease.—Dr. L. Faugères Bishop of New York city said that Bright's disease is not primarily a kidney disease, but is really a circulatory disturbance. The brain and kidneys, the end organs of the circulation, suffer most. It may well happen that death comes on from brain lesion at a time when the kidneys are yet in reasonably good condition. Dr. Bishop gave the details of a case in which, by careful dieting and avoidance of extremes of temperature or other hurtful factors, the kidneys were spared, yet the fatal issue came through the brain. The brain is a very sensitive organ and may show signs early in the case. The kidneys are insensitive and may not react until late in the progress of the arterial changes.

Early Symptoms of Bright's Disease.—The first symptoms of Bright's disease may be those of increased arterial tension. There may be, because of this, increased frequency of urination, or occasional nose bleed or persistent headache. A very early symptom may be functional gastric disturbance from increased blood pressure. These gastric symptoms must not be confounded with the nausea and vomiting of later stages of nephritis. The prenephritic condition of Bright's disease may be detected in the irregularities of the circulation. These may give rise to clumsiness in the use of limbs or to actual paresis of one or more members. There may be temporary aphasia and this symptom may recur several times, passing off completely in the interval. The earliest symptoms of Bright's disease if carefully looked for will nearly always be found in the brain.

Uremic Aphasia.—Dr. David Riesman of Philadelphia said that his attention was first called to the serious brain symptoms that came from uremia while making autopsies at Blockley Hospital. A number of cases diagnosed as apoplexy, because of hemiplegia and other forms of palsy, proved to have no lesions in the brain. The paralyses were due to uremia entirely. Dr. Riesman has recently seen several cases of uremic aphasia with and without paralytic accompaniments. The aphasia was usually of the motor form, although some traces of sensory aphasia were also noted. One patient was able to recognize, but could not recall the names of objects. She could repeat the names when given to her. When asked to sing the national anthem she could follow the air but could not give the words intelligibly. In this case there was considerable albuminuria, the urine was of low specific gravity, and there was marked polyuria. In twelve days the aphasia had passed away, except for some hesitancy of speech when the patient became excited and tried to talk fast. It is evident that the aphasia in this case was not due to hemorrhage, for it disappeared too rapidly and completely. Besides, it would have required very extensive hemorrhage to affect the centers for both speech and writing. The disturbance was not due to emboli, for it was too extensive and besides there was no known source of emboli.

Diagnosis of Uremic Aphasia.—This is made from the transitoriness of the affection and the concomitant existence of urinary symptoms. In adults the uremic aphasia may occur with any form of Bright's disease. Other factors besides the presence of toxic products in the blood of such patients may cause the symptoms. The increase in viscosity of the blood, for instance, may help to account for some of the nervous symptoms of the affection. The aphasia may continue for from one-half hour to forty-eight hours. Exceptionally it may persist for a week or even more.

Treatment of Bright's Disease.—Dr. Frank Billings of Chicago said that the first indication is to maintain the cardiovascular integrity. For this not specific drugs, but individualization of care is needed. The urinary output must be maintained and the nutrition must be kept up. Digitalis and a diuretic are not always needed. Iron should not be given unless anemia is present. The routine use of Basham's mixture, as pointed out by Tyson, is likely to do more harm than good. At times milk diet is excellent. The starvation methods of the quacks often give surprisingly good results and have attracted attention in the East and West. Overfeeding may be necessary in some cases. Beef is not a poison for nephritic patients, but should be used judiciously.

Frequency of Chronic Nephritis.—Dr. Thos. Futcher of Baltimore said that at Johns Hopkins in twelve years there had been 13,900 medical patients. Of these 590 suffered from nephritis. Only 42 of these cases had the acute form of the disease. Chronic nephritis seems to be rather the result than the cause of arterial changes. The prognosis of a case depends rather on the condition of the heart and blood-vessels than on the extent of the kidney changes, as they may be judged from the urine. The coma of uremia should be treated by injections of normal salt solution after venesection. About 500 c.c. of blood should be withdrawn, and from 1,000 to 1,200 c.c. injected. This at once occasions diuresis and gives prompt relief of the symptoms.

Glomerular Albuminuria.—Dr. N. S. Davis, Jr., of Chicago said that he has seen cases without any constitutional symptoms yet with albuminuria and some hyaline and even granular casts. In these cases scattered glomeruli throughout the kidney are affected, but enough excretory tissue is left to accomplish the work of elimination. When such cases are followed for several years, however, they develop chronic nephritis. Individual treatment is the only true method of bettering these patints. At times a milk diet or mingled milk and farinaceous materials give the best results. Albuminous materials are sometimes needed, however, and far from harming prove beneficial to the patient.

Nephritis and Oxyuris.—Dr. McKenna of Philadelphia reported a case of acute nephritis developing as the result of the invasion of the kidney by oxyuris vermicularis. Albumin appeared in the urine and notwithstanding the washing out of the bladder it continued to reappear. Just how the oxyurjs gained its entrance to the kidney is not clear. Its causative relation in the case is manifest.

Pneumonia and Endocarditis.—Dr. E. F. Wells of Chicago said that endocarditis is a rare complication of pneumonia, yet it occurs and must be looked for. Usually it takes the form of simple endocarditis, but at times it may be ulcerative in character. Dr. Wells has recently had a case in which ulcerative endocarditis developed. The pneumonia ran its normal course. Labial herpes was marked. On the seventh day hematogenous jaundice developed. The patient had good stools during the course of the pneumonia, but flatus was very abundant. There was considerable kidney irritation and on the fourth day 2 per cent. of albumin was found in the urine. On the sixth day this had risen to 5 per cent. After this time the amount of albumin declined until it disappeared. The pneumonia proved very severe, affecting nearly every portion of the lungs. Resolution proceeded very rapidly and convalescence was without incident until the patient's recovery seemed assured.

On the twenty-ninth day after the beginning of the illness the patient while sitting up in the afternoon was taken with extreme weakness. He was at once put to bed and slept. After this his shoulder was swollen and tender. He became restless and during the next few days a series of symptoms developed affecting most noticeably the nervous system and the special senses. There was some photophobia, some disturbance of hearing, and some hesitancy in speech. Later embolic symptoms developed. Red spots appeared on many parts of the cutaneous surface and these gradually changed to purplish in color. All the joints became sore, tender and swollen. The fingers were especially involved in this process. After several days an aortic diastolic murmur became audible.

Convalescence and Ultimate Result.—The patient was kept absolutely at rest and despite the severity of the symptoms began to improve. The arthritic symptoms were especially slow to disappear. The profound prostration so marked a characteristic of the disease did not disappear completely for over three months.

The fingers were not entirely well for eighteen months after the illness. A few hyaline and even a granular cast or two could be found after two years. The prognosis of ulcerative endocarditis, due to the pneumococcus, is not so absolutely fatal as for other forms of the disease, but it is evident that the hope extended to the patient must include the warning as to very slow convalescence.

Treatment of Ulcerative Endocarditis.—The principal element of the treatment of the affection must be insistence on the suppression of all voluntary movements. This must be continued for many weeks. There is not in pneumococcus endocarditis the tendency so often observed in rheumatic endocarditis of causing subsequent cicatricial contraction of the affected areas. The vegetations occur by preference on the aortic valves. They are usually large in amount and easily break down into the so-called ulcerative variety with the shower of emboli that is characteristic of the process. For the avoidance of this and the prevention of its continuance absolute rest is the indication. The restorative process is extremely slow and there must not be any attempt to hasten it or serious results in the heart muscle or valves may supervene.

Forms of Endocarditis.—Dr. James B. Herrick of Chicago said in discussion that he is particularly interested in the possibility of recovery from ulcerative endocarditis. Occasional recovery may be expected in this form of septicemia as in other forms. Many careful clinical records, such as the one reported by Dr. Wells, bear out this statement, and postmortem examination at times showed that death was due to the mechanical effect of the valvular lesion, the organism, usually the streptococcus or the pneumococcus, being degenerate and dead and the valves scarred and healing. Cases due to the staphylococcus were more malignant. The work of Harbitz was referred to and the importance of bacteriological examination of the blood as an aid to prognosis and treatment was emphasized.

Recovery Complete.—In closing the discussion Dr. Wells said that if recovery occurs in pneumococcus endocarditis, it is apt to be complete. The prognosis quoad vitam is more serious than for rheumatic endocarditis, but the danger once over the liability of serious crippling of the heart is much less.

(To be continued.)

SECTION ON SURGERY AND ANATOMY.

(Continued from page 1161.)

THIRD DAY—JUNE 12TH.

Obstruction of the Bowels by Meckel's Diverticulum.—Dr. James E. Moore of Minneapolic thought that in some very rare cases the diagnosis could be made, tentatively, on the curious fact that the symptoms come and go in the most astounding way. He said that the diverticulum was too often mistaken for the appendix and that it is a more frequent source (2 per cent.) of obstruction than is usually supposed. In operating care should be taken not to cut the omphalo-mesenteric vessels which are very often patent and run in the very bands which cause the obstruction.

Calculus Nephritis and Urethritis.—Dr. C. L. Leonard of Philadelphia said that it was the small rather than the large calculi which were to be feared. They often remained in the urinary system quiescent, save for very slow growth, for years, and were frequently mistaken for chronic Bright's. As a rule the larger the calculus the less marked the symptoms. To illustrate that a crying need existed of establishing suitable diagnostic methods for this condition he spoke of cases in which, because of erroneous diagnosis, good kidneys had been converted into death-dealing pus-sacs by the hydronephrosis produced by a small stone. Calculi vary widely in the time taken to traverse the ureter, it may be a matter of hours or months and the ray had enabled us to note symptoms which were characteristic of certain positions for the stone. As a rule, the urine furnishes but little that is of value in the diagnosis, it is either normal or indicative of chronic nephritis. Stones do not by any means always arise in alkaline urine; they are tolerably common in urine that is bacteria-free and chemically normal. He has found an unusual percentage of his cases to have ureteral stone—fully 60 per cent. The symptoms are as protean as can well be imagined. Subjectively, chronic gastric irritation had seemed to him very constant, but blood in the urine and pus have both been much overestimated. The ray is often of the very greatest value when it places the stone where the surgeon knows there is a good chance of its being passed, thus contraindicating operation. He based his views on the extraordinary value of the ray on the gratifying results of 254 cases.

Intrapubic Section for Prostatotomy and Prostatectomy.—Dr. E. Wyllis Andrews of Chicago said that it was utterly hopeless to gain any information from the literature of the prostate because of its fearfully chaotic state. He wished to present a theoretic argument rather than a dogmatic statement of conclusions. After operating via the suprapubic and perineal routes many times, the idea had occurred to him that very possibly it was not the *size* of the prostate but the *position* which gave the trouble. He was led to this supposition by noting that many very large glands gave no symptoms whatsoever, while just as often there were patients in the direst distress because of obstruction from a small and seemingly harmless organ. He believed that this was to be explained by an unnatural shortness of the anterior ligaments. These prevent a backward and downward movement of the gland when it undergoes adenomatous degeneration. Acting on these premises he cut into the angle of the pelvis just alongside the pelvis, tore the anterior ligaments loose and divulsed enough of the anterior portion of the gland to easily feel the sound in the urethra and closed the wound without having entered the urinary apparatus. This he considered a very important advantage of his technic.

Drainage of Extravesical and Extraperitoneal Suppurations of the Male Pelvis.—Dr. Eugene Fuller of New York said that although his subject covered but a very small class of cases, their great severity and danger formed a sufficient excuse for his having chosen it. He dealt with the anatomy of the part in great detail and named the various paths by which pus might make an exit from the pelvis. Below, there is a very definite limiting plane; above this is not so and suppuration may travel unobstructed to or above the kidney. The symptoms are very obscure, save when the condition is due to known extrinsic causes, but pain is always constant and characteristic. The treatment consists simply in full and free drainage. The abdominal opening should be in the lower inguinal region, through it a suitably curved sound will easily pass over the bladder into the pus sac and upon it a counter opening may be made in perineum or thigh. If both lateral chambers of the pelvis be involved, several tubes may be necessary.

External Urethrotomy from the Standpoint of the General Surgeon.—Dr. John C. Munro of Boston said that in a recent experience with fifty cases he had found that the stricture must be one of extreme tortuosity to remain impassible to one of half a dozen filiforms passed in a bunch to its seat and manipulated with care, skill and patience. He would introduce no sound for the first three days, then not oftener than every third day; it was less painful and just as satis-

factory. Extravasations of urine are complications which call for great common sense and much anatomical knowledge on the surgeon's part.

In the discussion of these papers Dr. A. T. Cabot of Boston said that the great difficulty of diagnosing stone, without some such wonderful aid as the X-ray was well-known. The ancient signs and symbols, which were formerly thought to have great weight, and even the more modern methods of segregation and ureteral catheterization were all shown to be very faulty by the ray. However, one must remember that this new help is not infallible and may lead us into gross error. Particularly is this true in attempting to establish negative diagnoses. The greatest danger of the ray failing exists in those cases in which the stone has passed into the pelvis, the heavy shadow of the bone effectually shutting off the lighter shades of the calculus. In these cases the point of tenderness is a valuable sign and the body may often be palpated by the finger in the vagina. Dr. Ernesto Blasucci of New York said that he desired to show a small instrument for bladder drainage. The so-called siphon instruments do not act as siphons at all and are apt to be unreliable.

Dr. Ochsner of Chicago said that full discussion of the means at hand to avoid or to control hemorrhage in prostatectomy was much to be hoped for. He had found that as soon as the organ is well exposed in the perineal wound two diverging cuts through its capsule suffice for digital enucleation of the organ and the hemorrhage from them yields easily to pressuré.

Dr. Moore of Minneapolis thought the members should thank Dr. Andrews for his suggestions as to the part played by the puboprostatic ligaments. Theoretically, his route is certainly the best of the three, but it did not yet seem to him as practical at the perineal. One great advantage it possessed was the fact of its leaving patent and undisturbed the seminal vesicles and ducts.

Dr. Bullitt of Louisville endorsed the great value of Dr. Fuller's paper. Such cases occur but seldom, but when they come the surgeon should be prepared.

Dr. Murphy of Chicago said that the enlarged prostate may have passing through it a urethra of large size—frequently an inch in diameter. The mucous membrane of such a tube would dip down as far as the skin, through the perineal wound and, making fast there, would establish a permanent fistula. This accounted for these disagreeable post-operative sequelæ. He therefore dissects out the posterior wall of the prostatic urethra. Dr. Ochsner had shown very clearly that the isthmus of the prostate must be avoided till the very last; this is the secret of having no hemorrhage. He was sure that the so-called mid-lobe was not a part of the prostate at all, enjoined the perineal route and urged that drainage is all important.

Dr. Ferguson of Chicago had given up the suprapubic route. Those patients who suffer subsequent to operation with incontinence do so because of the bladder sphincter having been cut.

Dr. Young of Baltimore said that although the X-ray was of very great value in diagnosing urinary calculi, he had found the cystoscope of almost equal worth. Once one has got a good look at the mucous membrane of the urinary papilla, much more could be judged from its condition than from the mere presence of pus, blood, or other foreign matters. He had done prostatectomy by all the methods and considered the operation of the very highest worth. It will be some time, however, ere the profession at large and the laity are educated to the early operation which is necessary for the success of this procedure. It seemed strange to him that no one had spoken of the Bottini operation, which in these very old cases seemed to fill a great gap. He knew that it was not surgical, but he also was well aware that it saved life, and if properly performed, with instruments specially suited to each case, would afford permanent relief. He had recently done 55 of these much-abused operations with three deaths, 19 of the patients having been over seventy. Prostatectomy was ideal, but in very bad cases prostatotomy was the safer operation.

Dr. Parker Syms of New York said that when he first began this sort of work all prostates were taken out by abdominal section. He had become convinced that the perineal route would be more favorable and had so demonstrated. He was glad to see the signs all pointing now to the abandonment of the abdominal path. For Bottini's operation he could say nothing favorable and soon expected to do prostatectomy on a patient upon whom a competent surgeon had done the former operation no less than four times. He spoke of his collapsable rubber bag for introduction into the bladder as a means of drawing the prostate down. He reported twenty cases, without a death, in each of which there was a perfect result.

Dr. Leonard in closing said that the X-ray had failed to establish a negative diagnosis in 254 cases in 2 per cent. This record established it as the most accurate diagnostic method at hand.

Dr. Andrews said that he saw all sorts of technical difficulties in the way of executing his operation, but in the three patients upon whom he had tried it they had not been insurmountable and in each an admirable result had been obtained. He urged that the effort should be to sever rather than to avoid the urogenital floor, so that the freed prostate might fall back and be out of the way.

Dr. Fuller was happy to witness the *coup de grace* to Bottini's worthless makeshift. He would not call it an operation. It had slumbered for twenty years; its revival had lasted two or three; everyone should hope that it was now set aside for good. It might be that he would in time advocate the perineal route; he had always used the upper path, but he was not hidebound on anything save on getting the prostate out.

Essentials in the Construction of Hospitals for Great Cities.—Dr. A. J. Ochsner of Chicago said that to the thoughtful surgeon it seemed very strange that one should, in this period of enlightenment, be using the hospital construction devised by Billings twenty-five years ago. When the Johns Hopkins Hospital was so ably planned, no man knew the cause of the advantages which arise from certain types of segregation. The community had indeed but just awakened to the fact. However, everything is now clear to us for it is known that the principles of asepsis lie at the root of all successful hospital management and erection. There is a great difference between the building of a hospital in a dense city like Chicago and in a comparatively large town. In the one case there are very definite reasons why the superimposition of the wards is indicated. The pavilion system with its many advantages is distinctly not applicable to this class. On the other hand, when there is plenty of land available, when the air is not fouled by gross and microscopical floating matter, when the heat near the earth is not intense, the spreading form of construction is the ideal one. That architects have at last been able to make positively fireproof buildings is fortunate, because without them, the narrow, tall type of hospital would be impossible. He had given a great deal of attention to the building of two hospitals in Chicago, one of which had been perfected some years ago, the other, the Augustana Hospital, being not yet quite finished. He would place the operating-rooms and the kitchens in the garret. The buildings should have their long axis

in the north and south direction, so that every room may have a morning or an afternoon sunbath.

Anatomy for the Practitioner.—Dr. C. M. Jackson of Columbia spoke of the very great importance of the home study of anatomy. Wondering in how many States this was practicable he had written to the Secretaries of all the States and Territories and had found that according to their laws they can be classified under three general heads: (1) Those States having no statutes whatsoever governing dissection; (2) those in which dissection is legal in medical schools only; (3) those in which practitioners are entitled to all material not wanted by the schools. There are about an even number of States in each class at present, but he urged that statutes of the tenor of the third type should be adopted uniformly throughout the country. In preserving an entire body he had found that the slow introduction of about six quarts of phenol, alcohol and glycerin formed an admirable mixture. For preparing bodies for section he first injects 50 per cent. formalin and decalcifies in 5 per cent. hydrochloric acid for three weeks. The bodies of adults can thus be sectioned in any direction without a saw. For the preservation of individual parts he would use 5 per cent. formalin, but this decolorizes. He suggested that the various county medical associations of the country each appoints an active young member to be curator of a modern pathological and anatomical museum where the members could work and study. This should not be a curiosity-shop, but an exponent of anatomy and pathology.

Anatomical Treatment of Fracture of the Femoral Neck.—Dr. C. E. Ruth of Keokuk first described his method which he had learned from Maxwell. He places an ordinary Buck's extension on the member; then, after carefully padding the inner aspect of the thigh with sized felt, he casts a sling about it just below the crotch and makes traction 40° forward and 10° outward. This is accomplished by a ten-pound weight and lies about in the axis of the neck. Out of forty cases so treated no shortening had occurred in sixteen; one-half inch in eleven; nine had been over eighty and of these none had died and six had been restored to good function.

Treatment of Fractures of Neck of Femur.—Dr. C. E. Thomson of Scranton reported seven cases in which skiagraphs and postmortem specimens showed absolute bony union. He said that old people should not be left in bed to die of bedsores or pneumonia; they should be operated on after the fracture had refused to heal under good conservative treatment. He cut down upon the great trochanter, makes a bone-flap of it and drives a silver nail through the neck to the head. A second smaller nail holds the flap back in place. He then puts on a spica plaster for three months, as Buck's dressing does not give suitable support.

Treatment of Fractured Patella by Subcutaneous Purse-string Suture.—Dr. J. B. Roberts of Philadelphia would first extend the knee and flex the hip, and keep the part cold for ten days prior to operation. He then passes his suture around the patella without entering the joint; puts in plaster for six days; keeps the patient on crutches for a month, and then dispenses with all treatment. His results were very good.

Dr. Leavings of Milwaukee recommended a free incision for these cases five days after the accident. He said that an extraordinary quantity of blood was poured out into the joint and that it should be washed away.

Dr. Beck of New York thought that so simple a suture, placed in the more-or-less elastic soft parts would give so as to be of but little value. He thought such a method as Stimson had devised more practical.

Acquired Non-malignant Stricture of the Rectum.—Dr. W. Duff Bullard of New York spoke of the causes, symptoms and treatment of this condition. A long study had convinced him that syphilis was not the great etiological factor generally supposed. Stricture was due to repeated traumata of the rectum rather than to syphilitic vascular degenerations. This is supported by the fact that such strictures never yield to anti-syphilitic treatment, and by the fact that they are far more common in women. This, not because syphilitis, or even its primary lesion is more frequent in that sex, but because of the infinite traumata to which the female rectum is subjected.

Dr. Means of Columbus said that in cutting the external sphincter the incision should be made obliquely as in tenotomies.

The Surgery of Ricketts.—Dr. Henry Ling Taylor of New York said that 15 per cent. of all orthopedic cases are due to this disease. The poorer classes of the great cities are typically those who suffer; it is, therefore, evidently a disorder of nutrition. Differential diagnosis between the rachitic spine and that of tuberculosis has occasionally to be made, but should give no trouble. The treatment of old rachitic deformities is accomplished by osteosclerosis or osteotomy—the latter operation being preferred in New York.

Two Successful Operations for Brain Tumor.—Dr. Joseph Ransohoff of Cincinnati said that he wished to emphasize two points which had been neglected or wrongfully interpreted. The first was that there is no reason why operation should be contraindicated in solitary tubercles of the brain; the second, that cerebral operations should be based on the *early* rather than upon the late symptoms.

Fractures of the Lower End of the Radius.—Dr. Carl Beck of New York showed a series of instructive lantern-slides of skiagraphs of this class of fractures. He said that they had taught him one thing, *viz.*, that one cannot properly adjust any fracture without the help of the ray. The old-fashioned and classic positions were used on the supposition that all breaks of the lower radius were about alike. One now knows that they are about as unlike as anything well can be. No surgeon can afford not to look at the extremity with the ray after the primary reduction and dressing.

FOURTH DAY—JUNE 13TH.

Traumatic Rupture of the Abdominal Viscera Without External Signs of Injury.—Dr. D. N. Eisendrath of Chicago said that the object of the papers was to call attention of the profession to a general lack of knowledge of this class of injuries and the necessity in future of earlier diagnosis and intervention. This is true because it is more frequent than gunshot and stab-wounds of the abdomen together. Ruptures of the kidney and intestine form 6 per cent. of injuries; next in frequency come liver and spleen. Surgical anatomy shows the majority of viscera, especially kidney and intestine to be poorly protected, the spleen is very movable, the liver quite fixed. The pancreas and stomach are well protected. The mechanism of injury has much to do with which organ is injured. Hence it becomes necessary to inquire exactly into the nature of accident. Force acts either directly or indirectly. If the former, either over a large area (more likely to rupture parenchymatous organs) or over a circumscribed (intestine or bladder). If by falls on feet, buttocks or head (indirect force) it is more apt to affect liver and kidney. It may rupture by tearing; bursting or direct crushing probably the most frequent.

Pathology must be clear before operation is thought of. In solid viscera, subcapsular tears are rare; most frequent are lacerations involving capsule and varying in depth from shallow to deep ones traversing entire organ and even pulpifying it. In hollow viscera simple con-

tusion of one or more coats leading later to perforation (traumatic appendicitic) or immediate rupture of all coats are characteristic. Small tears may heal, large ones may stop temporarily (report of case) or may lead to death from anemia. Ruptures of small intestine most frequent in alimentary canal, especially ileum.

Symptoms and Diagnosis.—He said that these were at times very deceptive. In general one can make the diagnosis between simple contusion and genuine injury in the early hours by considering the general and local symptoms. The former are those of shock and anemia; the latter are divided for convenience into those of the alimentary canal, genito-urinary system, and those in which hemorrhage (internal) symptoms predominate. Detailed consideration of all of these shows that one can make a fairly accurate diagnosis early. Chances of spontaneous recovery are only slight and vary according to the viscus injured. Less (7 per cent.) in intestine than in kidney (30 per cent.). He read a very detailed report and comparison of statistics for spontaneous and post-operative recoveries before and since 1896. Beginning with the latter date the percentage of recovery is much greater because of earlier diagnosis and intervention. Laparotomy in vain is better than death.

A Study of the Relative Merit of the Various Methods of Intestinal Anastomosis.—Dr. R. C. Coffey of Portland, Ore., had experimented with many methods on over 600 cadavers and on twenty living pigs. The intestines of swine resemble those of man much more closely than do those of any other known animal. He concluded that the Murphy button was the most rapid method, the Maunsell the slowest. The continuous suture which had been used in the Connell method was found in the gut lumen on several occasions two and one-half months after operation. This method, however proved very difficult of execution; Halsted's the most accurate. The O'Hara forceps and, indeed, all similar aids to the surgeon, were rejected as being first unsurgical and never on hand when needed. The crushable button method, a modification of which he presented, had yielded the best general results and seemed the most practical of all. He would make a cone out of potato or any kindred vegetable and, slipping each end of the gut over it to its middle, he transfixes gut and button with two long pins, which, in an emergency, may be toothpicks or almost anything else, at right angles to each other. The ends of the cutgut overlap and are inverted. So very simple was this method that he had seen it successfully performed by old practitioners and first-year medical students. His great objection to the Connell method, and, indeed, to all others, was that no one not doing gut surgery more or less continuously could possibly remember it, and would thus be at a los in an emergency. It was almost impossible to understand them from the intricate cuts and descriptions.

Dr. Connell of Leadville in opening the discussion said that he realized that the continuous suture was prone to remain as a foreign body. He had advocated leaving the last knot within the lumen to avoid leakage. He felt it important that all the coats be included in the sutures and that two layers of sutures made the operation just twice as long and seemed to him to increase the liability to gangrene.

Dr. Martin Tinker of Baltimore said that at Johns Hopkins frequent use was made of Halsted's bag in those cases in which the gut was dilated below and contracted above the suture line.

Dr. J. B. Bulitt of Louisville very cordially agreed with Dr. Eisendrath that in the event of rupture of any abdominal viscus immediate operation was the only surgical procedure.

Dr. Munro of Boston believed that Dr. Connell was wrong in thinking a through and through suture necessary for safe intestinal suturing. The secret of the whole thing was to avoid abdominal distention.

One Thousand Personally-conducted Cases of Ethyl Chloride Narcosis.—Dr. M. W. Ware of New York had had a very high percentage of success with this type of anesthesia. The pulse and respiration were but slightly altered by the drug and the patient's color was almost uniformly good. He had had no trouble with the collection of hoarfrost, which had proved so annoying to some. In twelve thousand cases there had been but one death and the necropsy showed that the organs of this patient were in advanced stages of disease. Nitrous oxide had proved itself by all odds the safest of all anesthetics, its death-rate being about two in a million. Six of Ware's cases had collapsed, but recovery under artificial respiration was uneventful. The after-results of narcosis had not been disagreeable. In a very few instances there had been vomiting and twitching, but neither of these amounted to anything. There was no increase of arterial tension at any time. Although long operations tended to make the narcosis very expensive, he had on one occasion given the drug for fifty minutes. He exhibited two cones which he had devised and found very practical.

Medullary Narcosis.—Dr. A. W. Morton of San Francisco had performed spinal injection six hundred times. In sixty cases the operation had been supra-diaphragmatic and four of these had been resections of the tongue. The patients had varied in age from eight to eighty. On one occasion only had it been found necessary to use general anesthesia; not because of failure to anesthetize, but on account of desperate nervousness on the patient's part. He could in all justice report that his one thousand cases had been without mortality, for the one which died was moribund at the time of operation. The amount necessary for narcosis averaged from three to four-tenths of a grain for a powerful adult. The author had found a glass syringe very useful. Prior to injecting it, the cocaine should be sterilized at 300° F. for fifteen minutes. It could then be kept in sterile bottles until used. It should be placed in the partly-filled syringe and allowed to dissolve in the withdrawn cerebrospinal fluid. It was essential for the establishment of rapid anesthesia that the injection be made very rapidly. The period lasted from one to five hours and but little general disturbance had been noted in any of the cases.

Election of Officers.—At the executive session, Dr. James E. Moore, Minneapolis, was elected chairman and Dr. John C. Munro, Boston, secretary for the coming year.

SECTION ON PEDIATRICS.

FIRST DAY—JUNE 10, 1902.

Dr. H. M. McClannahan of Omaha, in the Chairman's address, suggested the appointment of a committtee on necrology and also a committee on the general investigation of the subjects relating to the disease of children. His address reviewed quite thoroughly the current pediatric literature for the year. During the year 477 papers have been written on this subject. He emphasized the fact that the wonderful advances made in the subject of the diseases of children have been accomplished almost entirely by the physicians of this country.

Tuberculous Peritonitis.—Dr. T. M. Rotch of Boston said a clinical differentiation of cases based solely on the pathological findings is inadequate for a satisfactory decision, both as to diagnosis and as to etiology and treatment. The reason why in cases of tuberculous

peritonitis laparotomy has proved to be curative is not definitely known. Tuberculosis of the peritoneum may be a primary infection, most commonly, however, it is secondary. Three forms may be spoken of from a pathological standpoint: First, a miliary tuberculosis with ascites; second, a fibrous form, and this form is essentially chronic, and third, a later stage of the form just described in which there occurs tuberculous deposits with caseation and softening. This has been called the ulcerative form. Five salient questions require consideration: (1) The diagnosis of the presence of tuberculous peritonitis; (2) the detection of which pathological form is present; (3) whether the tuberculosis of the peritoneum is localized or is secondary to tuberculosis elsewhere; (4) which of these forms is amenable to treatment and (5) under what circumstances laparotomy should be performed. The symptoms of tuberculosis of the peritoneum in infancy and in early childhood are unsatisfactory and obscure. The tuberculin reaction is therefore of value when such reaction can be obtained, although negative evidence is not decisive. When there is a localized tuberculous process in the peritoneum which is chronic in its course such patients should be treated by laparotomy. The most favorable of these cases for treatment by laparotomy is the fibrous form. In the so-called ulcerative tuberculosis of the peritoneum, tuberculous deposits are usually found elsewhere than in the peritoneal cavity. These cases as a rule cannot be benefited by laparotomy.

Tuberculin in Diagnosis.—Dr. J. M. Dodson of Chicago emphasized the great value of tuberculin as a diagnostic measure, and called attention to the X-ray which had been used in a number of cases as a remedial agent. While the X-ray has been used with gratifying results in many cases, the number is not sufficiently large as yet to speak with certainty as to its positive value.

Cerebrospinal Fever.—Dr. J. P. Crozier Griffith of Philadelphia said that this is a disease which is prone to vary, especially toward certain types. This variation, on account of the often obscure symptoms, in many instances renders the diagnosis difficult or impossible. Some are of the fulminant type, while others are so mild that the child seems scarcely ill. In some of the patients the effect of the germ appears to be localized more upon other regions of the body than upon the brain and spinal cord. Three family epidemics were reported in detail illustrating this tendency to variation.

Dr. I. A. Abt of Chicago called attention to the relation of cerebrospinal fever to deaf mutism and said that observations had been made showing a greater increase of deaf mutism after severe epidemics of cerebrospinal meningitis.

Diagnostic Difficulties.—Dr. T. M. Rotch of Boston spoke of the great difficulty in making a diagnosis oftentimes in the earlier periods of life. Marked symptoms of either cerebral or spinal nature are absent in many cases. There may occur cases without signs of rigidity and without opisthotonus. A lumbar puncture is exceedingly important for diagnosis, but in order to be of value, it must be made in the first few days of the disease. If this procedure be delayed the conditions may have so changed that it loses its value. The Widal reaction, as in one of Dr. Griffith's patients, may show the presence of an accompanying typhoid fever or may indicate that the child had typhoid fever in the past. It is exceedingly important to make the diagnosis in cases occurring in private practice. The prognosis in chronic cases is bad, and the disease may leave the child mentally and physically imperfect. The child indeed may become idiotic. The disease sometimes abates, but while cerebrospinal meningitis is always a dangerous disease, there is always some hope of complete recovery.

Typhoid Fever in Infancy.—Dr. E. F. Brush of Mt. Vernon, N. Y., presented an interesting case of typhoid fever in an infant. Dr. A. C. Cotton of Chicago, dissented from the statement that children were exempt from typhoid fever because they did not drink water. Even the child *in utero* may develop typhoid fever, and the nursing child oftentimes acquires this disease.

Serumtherapy.—Dr. Edwin Rosenthal of Philadelphia presented a paper in which he reviewed the general status of the serums used in the treatment of disease.

Dr. A. C. Cotton of Chicago said that his experience with antitetanic serum had proved to be unsatisfactory. There are many patients who will recover without treatment, and it is doubtful whether the serum has any effect. Croupous pneumonia does not have that formidable aspect to him as it has to most physicians. With good hygiene most patients recover with very little medication; hence serum treatment yields clinical evidence of very little value, and in catarrhal pneumonia, with its many uncertainties, he thinks serum treatment of very little value.

SECOND DAY—JUNE 11TH.

Acute Gastro-Enteritis of Infants.—Dr. Margaret Taylor Shutt of Springfield, Ill., said that the heat of summer plays an important part by depressing the child's vitality and increasing the thirst, thereby causing overfeeding and the more easy production of fermentation in the food products during hot weather than at other times. Perhaps the greatest cause of summer complaint in children is improper feeding, or overfeeding, and the artificial feeding of materials which are not suited to the child's condition. Fever, prostration, vomiting, frequent and abnormal stools make up the clinical picture, and the diagnosis can only be mistaken in the beginning for the onset of some one of the exanthematous diseases. The prognosis depends first on the child's vitality, and second on whether it receives intelligent care and treatment, the greatest problem being whether directions with regard to proper feeding and hygiene will be intelligently carried out by the mother. The most important points in the treatment are to keep the child cool and clean, and to give a limited quantity of the proper sort of food. During the attacks absolutely all milk food should be stopped, the whole alimentary tract thoroughly cleaned out, fever reduced by sponging the body and irrigating the colon. The most explicit directions as to the proper kind and quantity of food after the attacks must be given and tonic treatment when it is indicated.

Milk Idiosyncrasies in Children.—Dr. Louis Fischer of New York said that by this term is meant those cases that will not digest milk at all. They are poisoned by the slightest amount of it given in any form, and seem to have an idiosyncrasy against milk almost analogous to a drug idiosyncrasy. Many individual peculiarities are noted. There seem to be a constant irritability of the digestive tract and an absence of normal assimulative power accompanied with intestinal indigestion of milk, cheesy curds in the stools, vomiting, nausea and frequently colic. The dietetic treatment is the most important, but what food should be given in the interim until the acute symptoms subside is sometimes a troublesome problem. Breast milk is just as incompatible and just as frequently so as cow's milk. The author reports excellent results in a series of cases from the use of a malt soup, the formula of which is as follows: Take of wheat flour 50.0

(about 2 ounces). To this add 11 ounces of milk. Soak the wheat flour thoroughly and rub it through a sieve or strainer. Put into a second dish 20 ounces of water to which add 3 ounces of malt extract; dissolve the above at a temperature of about 120° F., and then add 10 cubic centimeters of 11-per-cent. potassium carbonate solution. Finally mix all of these ingredients and boil. This gives a food containing albuminoids 2.0 per cent., fat 1.2 per cent., carbohydrates 12.1. There are in this mixture vegetable proteids 0.9. This food was very well borne and gave no discomfort.

Improvement of Breast-Milk and Prolongation of Lactation.—Dr. Thomas S. Southworth of New York thinks that lactation is a much-neglected subject. Full chemical analyses of breast-milk are important in judging the quality of milk, but are by no means imperative. The specific gravity affords a simpler method of judging its quality. The improvement of the quality and quantity of breast-milk is not a complicated matter if begun early enough. Faulty or deficient milk on the part of the mother is often dependent upon an unsuitable diet or lack of outdoor exercise. Those cases of early failures of breast-milk, when the supply is diminished or disappears in the first week or two, may often be prevented and the milk completely restored provided the woman is properly managed. Bad nursing habits and faulty maternal diet are the chief causes of trouble later on. To insure the mother having a full supply of milk plenty of fluid should be drunk during the first week of the baby's life. Then throughout the period of lactation there are four fluids she should have, important in the order of their enumeration—first, plenty of good cow's milk. This should be taken every day, as this is the greatest stimulater known of the maternal supply; second, corn-meal gruel, and, third, plenty of water, and for a beverage, cocoa. Tea should be prohibited. The balance of the diet should be plain, unstimulating and nutritious. Beer is not beneficial and has been found to be even harmful. The same may be said with regard to the malt. Constipation and anemia must be corrected and sleep, exercise and fresh air provided. The importance of breast-milk for the child makes it advisable to continue nursing during the greater part of the first year, either with or without the assistance of a few bottle feedings. Serious responsibility in weaning, exclusive of bottle-feeding, causes a larger mortality than where at least partial breast feedings are maintained.

Infant Feeding.—Dr. Alexander McAllister of Camden, N. J., enumerated the difficulties growing out of the necessity of using an artificial food rather than a natural one. It is important to have a proper conception of the many difficulties that beset the feeding of the child, both in the food-making and in selecting the proper food for the child in question. It should be remembered that cow's casein is not mother's casein, and that even though cow's milk may be intelligently modified it can never be made like mother's milk.

Dr. C. F. Wahrer said that a few years ago the milk-supply of large cities was anything else but milk. He referred to the great advances that had been made by enterprising physicians and the dairymen in improving the milk-supply. He agreed that the best substitute for mother's milk is cow's milk, as pure as can be gotten. This may be slightly modified to meet the occasion, but he has seen many children thrive on pure cow's milk.

Dr. Charles G. Kerley of New York said that most children can be fed on properly-modified milk, but it must not be expected to feed every child alike. The milk must be changed as the child advances. Many physicians get discouraged because the child does not immediately improve when they have started the percentages too high to begin with. When fed artificially the child must be started on very slow percentages. These should be increased, at the same time they must be very carefully watched. The patient must be fed according to the information given by the napkin. A careful observation of this and its characteristics is absolutely essential for an intelligent understanding of the condition of the child. It is true that there are some patients that cannot be fed on milk at first, particularly those that have been experimented upon with all kinds of food and fed in all kinds of ways until their digestion is so impaired that they cannot tolerate cow's milk and sometimes are not able to do so for a long time. The speaker disagreed with Dr. Southworth regarding the value of the malt extracts. In a series of experiments for improving the milk of the mother in a number of ways some years ago he found the malt extracts and the malt preparations were more effectual than anything else in bringing up the percentage of fat.

John L. Morse of Boston thinks that milk idiosyncrasies are rare and are due, when found, to the improper modification of milk either for the time being or sometime in the past. As to malt extract, that is the best single thing to increase the quality of breast-milk. He holds that breast-milk, even if artificial feeding has to be resorted to, should not be given up, because the breast-milk ferments may still be retained and are important in the digestive process of the child.

Dr. J. P. C. Griffith of Philadelphia thinks that there is no doubt that in the majority of cases physicians begin with the percentages too high for the baby. In regard to the question of vomiting, the fact is lost sight of that the dilution is not sufficient and the percentage of fat is too high. Many of the idiosyncrasies of milk are due to the fact that the child, through past mismanagements, has lost its digestive power. All children who have had such digestive disturbances will relapse at some time. It is a great mistake to change the food with every little variation of the digestive power of the child.

Dr. A. C. Cotton of Chicago said that no one who has ever written a book or delivered a lecture can tell just exactly how to feed the individual baby under treatment. The only way to settle the matter is to decide it for one's self. The man behind the bottle must mix his milk with brains and suit the feeding to the baby in question. If there were not means of modifying milk at all and not any methods of feeding a child artificially, it would be the greatest boon ever conferred on humanity, because it would drive all mothers to the necessity of nursing their own babies and giving Nature's own food and would save more lives than all the doctors in the land. If every mother were assured that her baby could not live and grow to maturity unless it were nursed in the natural way, it would be the greatest incentive possible for mothers to nurse their babies instead of shirking their duty.

Dr. A. J. Jacobi of New York said that physicians generalize too much with regard to infant feeding. The only two points of value that have been learned in the last ten years is that cow's milk, which is pure, fresh and germ free, is the only food a child should be fed on artificially with proper modifications. In regard to the feeding of a newborn infant, of course, the baby is hungry, the baby ought to be hungry, and should be fed in a proper way, principally with water. There is no excuse for allowing a newborn baby to lose its weight during the first week of its life, and a small quantity of some simple food may be given. Plenty of water, however, flushes out the kidneys and the excretory organs and prepares the child for the proper handling of its food. If plenty of water be given the

child at first, the uric-acid infarcts about which so much is heard nowadays would probably be prevented. Many of the cases of renal calculus would not occur. There is no one special method of feeding that is absolutely the true one to the exclusion of all others. In each case the food must be suited to the individual, but there is the one principle that the milk should be good, fresh, pure and clean, and should be germ free.

Adenoids.—Dr. W. Freudenthal of New York presented a paper entering into a consideration of both acute and chronic inflammation of adenoids with the indications for palliative and operative treatment.

The Treatment of Acute Earache in Young Children.—Dr. George L. Richards of Fall River, Mass., said that earache in children is a most troublesome and annoying affection. Many methods have been advised for its relief, but none of them have been attended with very much success. Several of these methods were mentioned only to be condemned. The author advocated a medicated gelatoglycerin bougie, which he has been using for some time with excellent results. The bougie is composed of the following ingredients: Carbolic acid, 7 m.; fluid-extract of opium, 6 m.; cocaine, 3 gr.; atropine sulphate, 3 gr.; water, 52 m.; gelatin, 18 gr.; dehydrated glycerin, 158 gr., a sufficient quantity to make 42 bougies. This gives to each bougie carbolic acid $^1/_6$ m. and fluid-extract of opium $^1/_1$, cocaine $^1/_{14}$ gr., atropine sulphate $^1/_{14}$ gr. These small bougies are particularly useful because they may be kept in the house and may be inserted by the mother at night when the child wakes up screaming with earache.

Angiosarcoma.—Dr. Cook of Chicago read a paper on this subject and presented a specimen of a tumor removed from a child of three and one-half years involving both the kidneys and filling up almost the entire abdominal cavity.

Clinical Features of Some of the Anemias of Childhood.—Dr. W. C. Hollopeter of Philadelphia said that the gastro-intestinal tract is more to blame in these troubles than the food that goes into it. The great primary cause of anemia in childhood and the least recognized is dental decay. This furnishes more cases of anemia than all the other disorders of childhood put together. The result of dental decay is to infect the mouth and stomach, poison the gastro-intestinal tract, producing a general catarrhal condition, deteriorating the blood and rendering the nervous system of the growing child unstable. Oral sepsis must be avoided therefore, and gastric catarrh prevented by a proper toilet of the teeth. The child suffering from anemia and catarrhal affection of the gastro-intestinal tract cannot grow and develop properly. Associated with decaying teeth will be found many cases of tonsillitis, pharyngitis, infection of the ear and gastro-intestinal infection, all of which may be prevented by a proper hygiene of the mouth. The second unrecognized factor in the anemias of childhood is nasal stenosis, which produces mouth-breathing. This is frequently the result of the acute infectious diseases, and can most generally be avoided by a proper toilet of the nose and mouth during acute inflammation. The third factor contributing to anemia in children is eye-strain characterized by vomiting, headache, etc., in car-riding and car-sickness, and may be prevented and corrected by proper glasses.

Retropharyngeal Abscess in Infancy.—Dr. John Lovett Morse of Boston reviewed the clinical history of these cases, which usually occur in the second or third year of life and are almost always secondary to disease of the adenoids. In the diagnosis the author emphasized the importance of digital examination of the throat. Suppuration rarely takes place in more than one lymph node though several may be involved. Retropharyngeal abscess is always preceded by retropharyngeal adenitis. When suppuration occurs it develops in five or six days and the abscess formation is in the lateral wall of the pharynx rather than in the back. Several interesting cases were reported showing that the prognosis in those cases treated by incision and evacuation of the pus is very good, while if they are not incised general infection may take place with an unfortunate result.

Report of a Case of Bulbar Paralysis.—Dr. A. C. Cotton of Chicago reported an instructive case of bulbar paralysis occurring in a girl of eleven and following diphtheria which had occurred several years before. The case was interesting on account of the various diagnoses that had been made before the paralysis was discovered.

Synostosis of the Skull with Universal Calcification of the Arteries in a Boy Three Years of Age.—Dr. David Riesman of Philadelphia said that arterial diseases in children are not nearly so rare as commonly supposed; they frequently follow some of the infectious diseases. The case reported was remarkable on account of the synostosis of the cranial sutures. It was pronounced an extraordinary case of malnutrition. Treatment was not of any avail. The author thinks that the malnutrition in the case was perhaps secondary to a congenital abnormality. He referred to the interesting analogy between cases of this sort and certain forms of infantilism and cretinism. An interesting feature of this case was the atrophic condition of the thymus gland, but what bearing this had upon the condition present the author is unable to say.

Spontaneous Hemorrhage in the Newborn.—Dr. I. A. Abt of Chicago said that there are two kinds of hemorrhage observed in the newborn child, traumatic and spontaneous. The paper dealt wholly with the spontaneous variety and was accompanied with the report of ten interesting cases. There may be a variety of causes producing hemorrhage. It is possible it may be from any one of a number of infections. One case was directly traceable to hereditary syphilis. The recent tendency has been to study these cases along bacteriological lines, and there are numerous micro-organisms that are thought to be causative factors. There are, however, many conditions as predisposing factors. Changes in the blood-vessels themselves may favor it. The character of the hemorrhage is in some slow and oozing and in others profuse at intervals. The sites of the hemorrhage are also varied. It may occur from the umbilicus, under the skin, from the nose, mouth, vagina, stomach, bowel, ear, etc. The temperature varies and in one case ran as high as 104° F., and remained elevated during the entire course of the disease. In another it remained subnormal. Cyanosis was a late manifestation in two cases. In a few icterus occurred and in one convulsions and muscular twitchings. Evacuations from the bowels were very offensive before the occurrence of the hemorrhages. As to treatment internal remedies have no influence on the disorder nor have local styptics any permanent value. The use of gelatin deserves some mention. The author concludes from a number of experiments on animals that the subcutaneous injection of gelatin will produce a toxemia in children. The nature of these toxins is not known, but they should be considered as ptomains. No further proof is now needed that gelatin causes a rapid coagulation of the blood. Undoubtedly it can be given with good results by the stomach, but it is very questionable whether it should be given by the subcutaneous method.

Dr. Rosa Englemann of Chicago suggested that inasmuch as infections were thought to play such a part in the hemorrhages that the germs found should be

inoculated and cultures made so as to arrive at some classification of them. In addition to all these supposed infections there might be back of it all some constitutional trouble like syphilis. Certainly syphilis plays a most important part.

Dr. Holmes of Chicago related his experiences with gelatin subcutaneously in two obstetrical cases without reaction and did not see why it might not be used in children.

Dr. A. Jacobi of New York said that he had seen a great deal more of hemorrhages in the newborn fifteen or twenty years ago than he does now; he also saw at that time much more puerperal sepsis. At that time he almost considered the tendency to hemorrhage in the newborn a natural condition. He thinks puerperal sepsis has much to do with the occurrence of hemorrhage in the newborn. Another important cause is the insufficiency of the blood in certain conditions of anemia. It may also depend upon the structure of the blood vessels themselves. The interna of the vessels are not fully developed. Hemorrhage in the newborn is very apt to be copious, because there is a great deal of hemoglobin in the blood and yet it is less dense than in the adult. In the hematoma found after hemorrhages the blood in the child will be found uncoagulated, while in a similar case in the adult the blood would have been found coagulated. Meningeal hemorrhage is quite frequent and the speaker thinks most of the deaths occurring in the first day of life are due to this cause. Most of the cases of hemorrhage are post-natal, but he thinks puerperal sepsis is the most important cause.

Sporadic Cretinism in Children.—Dr. Englemann said that cretinism is relatively much more frequent in children than was formerly supposed. It passes oftentimes unrecognized. Koplik has pleaded most earnestly for its recognition. Heredity seems to be a factor in the adult form, but this has not been determined in the child. There is a growing opinion as to its infectious nature, but no very positive data have been obtained. The interdependence of nervous control over secretion is recognized as necessary to healthy functionating, but it is not certain whether disorder of such control is the cause. The process is a slow delay of the bony development of the body and a consequent dwarfism.

Dr. A. Jacobi of New York emphasized the importance of combining the different glands in the treatment. Many of the unsatisfactory results of glandular treatment are because the case is treated in only one direction. After having seen that a single ductless gland has been given without results a combination with other glands should be made. As a rule, thyroid feeding will be sufficient for myxedematous conditions. Another point is a shortening of the cranium, producing as a result a synchondrosis of the bones. Many of these are due to rickets which runs its course before birth. When the child is born there is a shortening of the bones at the base of the cranium because of the ossification of the occipital and sphenoid. The cases that have a short base of the cranium will be improved the least.

Dr. David Riesman of Philadelphia called attention to the fact that it was in this class of cases that preventive medicine might achieve its most brilliant results. The term athyria employed by the author should be used to designate functional athyria and not anatomical athyria.

Dr. Englemann, referring to the corelation of the glands, said that the combination of the pituitary with the thyroid showed quite a difference in the growth of the patient.

Chlorosis.—Dr. C. F. Wahrer of Ft. Madison, Ia., said that the diagnosis and treatment of this affection are easy for the skilled clinician, but there are conditions which may be mistaken for it or which may complicate it. The author reviewed the various theories of the etiology of chlorosis and described the early and latent forms among adolescents. There is no relation he thinks between this disease and phthisis.

Dermoid Tumors in Children.—Dr. S. W. Kelley of Cleveland reports two cases, one a dermoid tumor occurring in the testicle of a boy of two and a half years and the other in the ovary of a girl of eight.

Sudden Death in Infants with Lymphatic Constitution.—Dr. F. X. Walls of Chicago reported two cases of so-called thymic sudden death in infants and presented a brief review of the literature on the subject, showing the relation of sudden death in infants to the lymphatic constitution.

Recognition and Prompt Removal of Post-nasal Adenoids in Children.—Dr. Louis J. Lautenbach of Philadelphia pointed out the great frequency of this trouble and showed that it is among the poorly-nourished and scrofulous that adenoids are most commonly found. It is also oftentimes found in deaf-mutes and perhaps is the cause of their deaf-mutism in many cases. The author mentioned the various methods of determining their presence and modes of making the examination. The nature of the growths varies and presents different appearances. Many constitutional ailments follow in the wake of adenoids and their obstructive influences in respiration are productive of many bodily ailments. The posterior and upper walls of the nasopharyngeal space are by no means always smoothly and regularly arched. There are frequently ridges observed on the posterior and upper pharyngeal wall and this fact is important in the method of operating. The author does not usually use an anesthetic in operating nor does he use curette, forceps and cauteries, but operates by scraping the mass out with the finger-nail or steel finger-nail. He lays stress on knowing the exact condition of the pharyngeal vault after the operation, and pointed out the necessity of constitutional treatment in all cases of post-nasal adenoids.

Election of Officers.—Officers elected for the ensuing year were Dr. John C. Cook of Chicago, Chairman, and Dr. Thomas S. Southworth of New York, Secretary.

SECTION ON OBSTETRICS AND GYNECOLOGY.

(Continued from page 1164.)

SECOND DAY—JUNE 11TH.

High Amputation of the Cervix versus Hysterectomy for Operable Carcinoma of the Cervix.—Dr. C. C. Frederick of Buffalo said that the results of cancer of the cervix were so different from those of the body of the uterus that it must be considered entirely alone. No woman operated upon for cancer of the cervix should be considered cured unless she has lived five years after the operation. Recurrence is in the scar and removal of pelvic lymphatic glands is not of much service. The results of hysterectomy for cancer of the cervix are not what some enthusiasts would lead one to expect. Amputation of the cervix at or above the internal os is much simpler and less dangerous; the results as to relapse are as favorable as from hysterectomy; the period of relief is as long; the patient is able to be up in a shorter period; the shock of the operation is less and the results in general are as good. The only argument for hysterectomy is that recurrence is probably accompanied by less hemorrhage and discharge. Of 100 cases seen by him, only 26 were considered favorable for hysterectomy. On 14 of these hysterectomy was performed, with 13 recurrences and deaths, 1 recovering. On 12 high amputation of the cervix was performed, recurrence occurred in all.

Frederick is as well pleased with the results of high amputation of the cervix as with hysterectomy, and with the arguments in favor of the operation itself he does not see why it should not be adopted. The free edge of the vagina is sutured to the edge of the uterine canal to prevent stenosis and dysmenorrhea. Statistics of hundreds of cases were read, one report being that of Dr. McMonagle of San Francisco, with 482 operations and 473 recurrences and 471 deaths.

Operation for Recurrence of Cancer After Hysterectomy.—Dr. E. W. Cushing of Boston reported a case of apparently hopeless recurrence after vaginal hysterectomy upon which he did a most radical operation with apparent cure. Through abdominal incision the pelvis was thoroughly cleaned of all the tissue that could be removed, the operation being completed three weeks after through the vagina, the patient's condition not justifying completion at the first operation. One ureter was cut during the operation and a urinary fistula which was the only untoward result of the operation. He believes this operation justifiable in cases of early recurrence when the radical operation was not done at the primary removal. Cases after operation should be observed for years to detect early any evidence of recurrence. This is made less liable if a radical operation be done by freeing the uterus and all pelvic tissues through abdominal incision and then removing the uterus through the vagina to avoid infection of the wound.

Dr. Gustav Kolischer of Chicago said that cancer of the cervix was too indefinite in reporting cases. The portion of the cervix involved should be stated. The mortality of hysterectomy is high. A statement not agreed to by other speakers was that recurrence rarely took place in the scar but in the lymphatics of the parametric tissue.

Dr. W. H. Wathen of Louisville disapproves of high amputation of the cervix or any operation that is not radical.

Dr. H. O. Marcy of Boston finds that it is wiser and safer to do the most radical operation instead of high amputation. Radical operation through abdominal incision gives him the best results. This seems to be the experience of the great majority of operators. Why not do this operation then instead of those of earlier times when conditions were not so well understood as now?

Dr. G. B. Massey of Philadelphia recommends the use of electrolytic salts of mercury by local application. This has cured one primary growth and alleviated five recurrences.

Dr. E. E. Montgomery of Philadelphia says his own experience has led to the conclusion that it is desirable to get rid not only of the cervix, but also of the entire organ. Recurrence after either operation is due to portions of the growth being left. Squamous-cell growths of cervix are more amenable to treatment than are columnar celled varieties in the canal. In no class of cases is the use of the cautery more strongly indicated than in the removal of these growths. Narrowing of the canal, dysmenorrhea, and collections of material in the uterus are arguments against high amputation. There is also increased tendency to development of the disease in the scar tissue thus left.

Dr. C. P. Noble of Philadelphia is not so pessimistic as some of the speakers. His own statistics show 20 per cent. of all cases of cancer of the uterus to be free from recurrence after five years. These include cancer of the fundus, it is true, but there should be 10 per cent. of cures in cervix cases. In very early cases he does the most radical operation he can, in very bad cases which give a high operative mortality under serious operations he does palliative operations. If they improve, he may then use more radical treatment.

Dr. W. H. Humiston of Cleveland said that of all the cases he has seen where the trinity of symptoms—pain, hemorrhage, odorous discharge—were present not one case is alive to-day. In cancer of the body of the uterus he has almost phenomenal success, basing early diagnosis largely on the examination of scrapings.

Dr. L. H. Dunning of Indianapolis said that in cancer of the cervix with no apparent involvement beyond, 15 per cent. of the patients have survived five or more years. It should not be said that high amputation of the cervix is attended by no mortality. The after-condition of patients upon whom total removal of uterus and adnexa is performed is better than those where amputation is done.

Dr. A. J. Downes of Philadelphia emphasized the value of electrothermic instruments in operations upon these cases. He finds they give better results than those attained by the use of ligatures.

Dr. J. H. Carstens of Detroit is doing fewer vaginal hysterectomies. He prefers to prolong life in severe cases by palliative treatment.

Dr. C. C. Frederick of Buffalo in closing said that recurrences follow the best methods of the best operators. If the radical operation is to be done he commends that introduced by Dr. Werder. He still sees no reason for removing the body of the uterus when it is not involved.

Hemostasis of the Broad Ligament.—Dr. H. P. Newman of Chicago said the tendency of late years had been to do away with ligatures. The objects desired by methods of hemostasis, in operations are (1) security against hemorrhage; (2) protection against sepsis; (3) the minimum injury of the parts; (4) the absence as much as possible of foreign bodies. Electric cauteries can be used only when electricity is at hand. Angiotribes have too many modifications and are often not rightly used. His own experience with powerful clamps has been gratifying, no hemorrhage having followed their use. Sometimes he enforces their work by the use of catgut ligatures on the ovarian or uterine arteries. The clamp is applied, then the ligature to the main artery on the broad ligament side of the clamp. The clamp is then removed and no further treatment accorded the stump. A second ligature, when necessary, can be applied before or after the removal of the clamp. The advantages claimed for this method are (1) complete and permanent hemostasis with no slipping of the ligature; (2) inability of the artery to contract and form a hematoma or hematocele; (3) multiple thrombi are formed and all vessels thus occluded; (4) there is no strangulated stump to slough; (5) foreign material is reduced to a minimum; (6) the danger of shock is materially lessened; (7) convalescence is hastened.

Dr. A. Palmer Dudley of New York said that the effect of crushing instruments on the nerves and lymphatics should not be forgotten. Authentic cases reported show that patients may die after these operations from tetanus, hemorrhage, or shock. Secondary hemorrhage follows as many cases as it does where the ligature alone is used. If the danger of the ligature is sepsis, why apply even one? He thinks the method of ligation will be used when crushing instruments have become a curiosity. The use of the ligature and uniting the peritoneum over the stump are more perfect surgery.

Dr. A. Goldspohn of Chicago spoke of his experience with crushing instruments on tissues, not on living beings. He found it difficult and uncertain to obtain the thinness of tissue required, and there is danger of tearing off the tissue to be crushed. The time in using the clamp and ligature is longer than necessary in the use of the ligature alone.

Dr. J. Riddle Goffe of New York thinks crushing

instruments are of value. He frequently, but not always fortifies with a ligature. This method leaves a thin stump, no suppuration follows, and no adhesions form.

Deflected Presentation in Labor.—Dr. Gustav Kolischer of Chicago spoke of the varieties of presentation depending upon degrees of deflection of the head and of the diagnosis and management of anterior vertex, brow and face presentations. In anterior vertex the resistance by the back of the fetus is more in the middle line and internal examination shows the anterior and posterior fontanelles on the same level. The later condition in this presentation is the pressing of the anterior lip of the cervix against the pubic arch with lack of full dilatation of the external os. The cervix becomes more and more distended as the child is delivered into the lower uterine segment and rupture threatens. Interference is demanded in the shape of transformation into an occiput presentation or the application of forceps, this being a frequent indication for the employment of axis traction. The technic of forceps delivery was given. An important diagnostic point in face presentation is that the resistance of both the body and limbs of the child are felt in the same half of the uterus by external examination. Delivery may be secured by version or by applying forceps, the oblique position, if present, being corrected by the hand before the forceps are applied. These conditions due to deflected presentations may easily lead to complications but are generally readily managed by interference if the diagnosis be made correctly and in time.

Dr. R. Hohnes of Chicago said that extension was of vital importance when the occiput presented posteriorly, but its presence was not of importance in anterior presentation. Posture should be used in all cases of occiput posterior. In face presentations it is to be remembered that the fronto-mental line passes almost transversely during descent. This is recognized in Europe, but is not sufficiently noted by American textbooks. As a consequence, practitioners apply forceps, when that procedure is the last thing that should be employed. In mentoposterior positions, employ manual correction, but in mento-anterior, version should be done.

Massage and Exercise in the Management of the Puerperium.—Dr. C. S. Bacon of Chicago reported the good results obtained from the above expedients. He believes that rest in bed for two to four weeks after labor is generally desirable for the patient to recuperate from the exhaustion of pregnancy and labor. This maintenance of the horizontal position is especially desirable in patients with poor muscular development in order to avoid the occurrence of splanchnoptosis. Massage and exercise are necessary to counteract the effect of remaining in bed upon the muscles, circulation, secretion, excretion, etc. The measures advocated are not new, but are mentioned because massage is not taught in medical schools and many physicians do not employ it because a nurse is not available and they themselves do not understand the technic. The various manipulations in massage and exercise movements were detailed by Bacon. In massage of the breast the mistake is made by nurses of making massage toward the nipple in all cases. More often the breast is distended by blood and lymph more than by milk and massage in the direction of these channels is of more benefit and gives much less pain. No ill-effects upon the lochial discharge from the exercise is noted but abdominal movements had better be postponed for one week after labor. Exercise is begun on the second or third day, the patient having been allowed to move around in bed as she chooses. Patients treated in this way can walk as soon as they get up and are allowed to walk at short intervals for some days before they are allowed to sit in a chair for any length of time.

Dr. R. Holmes of Chicago said that arbitrary rules were not good and if a healthy woman has gone through a normal labor he sees no use of keeping her in bed for more than a few days. He has three tests for determining when a woman may get up: (1) The degree of tenseness of the abdominal wall; (2) the condition of the perineum; (3) the degree of involution of the uterus.

Contribution to Ureteral Surgery.—Dr. X. O. Werder of Pittsburg said that the wounding of a ureter now did not lead to the radical operation of nephrectomy as in former days, but was an accident of importance. In an experience of over 1,500 abdominal sections he has injured the ureters four times, the cases being detailed. In three, immediate implantation into the bladder was performed, success resulting in two and vaginal fistula in the other. By a novel procedure the upper portion of the vagina was subsequently made a diverticulum of the bladder, completely curing the patient. The mucous membrane of the two organs were united by suture. Cystoscopic examination afterward showed the bladder to consist of the two parts united by an opening large as the thumb. The operation is recommended, as only the upper fornices of the vagina are used and cohabitation is not prevented. These operations have shown the unreliability of catgut sutures in ureteral implantation into the bladder.

Some Cases of Ureteral Stricture.—Dr. H. A. Kelly of Baltimore reported several cases of stricture of the ureter and spoke of the diagnosis and treatment. More discrimination is needed in dealing with pathological conditions of the urinary tract above the bladder. But little is said of stricture of the ureter. The condition is not often urgent as in urethral stricture and is let alone until the ureter distends, the condition works back upon the kidney, and that organ is often removed for hydronephrosis when it is the effect and not the cause. Cases of hydronephrosis should be named cases of ureteral stricture. This would call attention to the true condition. The importance of recognizing the condition is that many cases are amenable to direct treatment. The value of saving a diseased kidney was illustrated by several instances in which the patient had lived for several years with only one kidney and that a damaged and infected organ. Stricture almost always occurs at the lower end of the ureter, only one well defined stricture at the renal end being on record. The most common cause of stricture is ureteritis due to the tubercle bacillus, the gonococcus being the rarest causative organism. There is no particular diagnostic symptom of ureteral stricture but persistent pyuria is an indication. Diagnosis is made by direct examination of the urinary tract. The distended ureter may often be felt by vaginal examination or through an air-distended rectum. By the cystoscope the area surrounding the orifice of the ureter is swollen and the orifice may be only a dimple. There is difficulty in the introduction of a catheter. Often when it is introduced there is an immediate and steady flow of urine, neither of which is found in a healthy ureter. Catheterizing the pelvis of the ureter shows it to hold an abnormal amount of urine. The bite of the stricture on the catheter may be felt.

Treatment: In early cases much can be done by getting rid of the infection and by dilatation of the stricture. In aggravated cases the stricture can be excised and the ureter implanted into the bladder. In tuberculosis the entire upper urinary tract must be excised.

Dr. H. P. Newman of Chicago detailed a case of destruction of the bladder and urethra, due to delivery

while the patient's bladder was full, in which he contemplates a radical measure to restore the urethra, the patient not allowing closure of the vagina. The contemplated procedure is the use of the very much contracted uterus to form the floor of the bladder. The cervix is to act as the urethra, the internal meatus to be the external os and the external meatus to be formed of an opening in the fundus.

Dr. Gustav Kolischer of Chicago spoke of the difficulty of measuring the length of a ureteral stricture. He does not agree with Kelly that the tubercle bacillus is the most frequent cause of ureteritis.

Dr. H. A. Kelly of Baltimore said that a stricture could often be located by measuring the distance to the opening of the ureter. The catheter is introdnced and the pelvis of the kidney filled with fluid. With the patient in the erect posture the catheter is withdrawn until the fluid ceases to flow, which point is approximately the upper limit of the stricture. The difference of the two measurements is the length of the stricture. He finds that injury of the ureters during abdominal operations occurs less frequently as the operator's experience increases. Bisection of the uterus often helps avoid injury to the ureters. Careful inspection of the position of the ureter when the abdomen is opened is of great importance.

A Plea for the Early Diagnosis of Ectopic Pregnancy.—Dr. H. D. Ingraham of Buffalo said that ectopic pregnancy is often mistaken for miscarriage, appendicitis, pus tubes, etc. When rupture occurs the diagnosis is easy in most cases. Diagnosis should also be made before rupture, but examination of pregnant women for that purpose is not advisable. Three cases of mistaken diagnosis of ruptured ectopic pregnancy by general practitioners were detailed, death occurring in each case. If the history is obtained and a careful examination made in these cases, the diagnosis should be made. At least if ectopic gestation is not diagnosed the physician should recognize that a condition demanding operation is present. Paroxysmal pain, with tenderness in the pelvis, the condition growing worse, with a mass forming in the pelvis—this should demand operation before the patient becomes moribund.

Dr. C. L. Bonifield of Cincinnati said that general practitioners in his vicinity are diagnosing these cases. One of his hospital internes diagnosed two cases. In many cases hemorrhage is not fatal to the patient at the time of rupture.

Cesarian Section Made Necessary by a Ventrofixation.—Dr. W. M. Findley of Altoona reported this interesting case. The patient was a woman of forty-three, who seven years before had been subjected to a ventrofixation of the uterus. Difficulty in labor led to the discovery that the cervix could be reached only by the introduction into the vagina of the hand and arm to the elbow. The abdomen was opened and a Porro operation done, the patient dying on the table, apparently from chloroform poisoning, that drug having been administered for some time by the attending physician to guard against rupture of the uterus. The two silkwormgut sutures used to fasten the uterus were in perfect condition. This case suggests the necessity of inquiring of every patient if any operation has been previously performed on them.

(To be continued.)

BOOK REVIEWS.

THE MEDICAL TREATMENT OF GALL-STONES. By J. H. KEAY, M.A., M.D. P. Blakiston's Son & Co., Philadelphia.

DR. KEAY'S little book of 125 pages is an excellent exposition of the medical measures that may be of service in the treatment of gall-stones. His reasons for writing the book are that a long and painful personal experience of this disease and painstaking examination of many who have similarly suffered have forced him to certain conclusions differing from those of Mayo Robson, Kehr, and other writers on the subject. As the result of the success of brilliant surgery, he adds, it seems to be forgotten that cholelithiasis is a disease especially amenable to medical treatment.

Perhaps the note sounded by Dr. Keay is necessary in order to restore the harmony of proper conservative opinion and to prevent hasty decisions as to the necessity for operating in certain cases. Certainly this little work summarizes all that can be said for the medical treatment of gall-stones, and because of this it is well worth reading by every medical man interested in the subject.

MANUAL OF CHILDBED NURSING, WITH NOTES ON INFANT FEEDING. By CHARLES JEWETT, A.M., M.D., ScD., Professor of Obstetrics and Diseases of Women in the Long Island College Hospital. Fifth Edition. E. B. Treat and Company, New York.

THE concise manner in which the work of the physician and that of the nurse are outlined in this book will save much thought on the part of the attendant. for each article necessary, even to the exact quantities of each of the several antiseptics, is mentioned in the order of its use. The headings Pregnancy, Labor, The Puerperal Period, Points to Be Noted by the Nurse, Care of the Mother, Care of the Child, etc., indicate the scope of this brief and practical manual. The book is designed for physicians and nurses, and a chapter is devoted to instructing the nurse what to do if the birth take place in the absence of the physician. Artificial feeding is given adequate treatment.

MATERIA MEDICA, PHARMACY, PHARMACOLOGY AND THERAPEUTICS. By W. HALE WHITE, M.D., F.R.C.P., and REYNOLD W. WILCOX, M.A., M.D., LL.D. Fifth American Edition. P. Blakiston's Son & Co., Philadelphia.

COMPACTNESS, accuracy, and utility are the attributes of this excellent manual now before the physician and student in its fifth edition. The merits of the work are so well known that no further commendation is necessary from the reviewer's hands. Its almost universal adoption has set the stamp of practicability upon it. The present edition differs in no essential particular from its predecessors. It is 40 pages longer, contains all of the newer synthetics which have proven of service and is a thoroughly modern and comprehensive textbook, admirably adapted to the needs of students.

BOOKS RECEIVED.

The MEDICAL NEWS *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* MEDICAL NEWS *will shortly appear.*

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY. Vol. XIII.

THE PRACTITIONERS' MANUAL. By Dr. C. W. ALLEN. Second Edition. 8vo, 889 pages. William Wood and Company, New York.

A PRACTICAL TREATISE ON SMALLPOX. By Dr. G. H. FOX. Quarto. Illustrated. Parts I., II. J. B. Lippincott Company, Philadelphia and London.

PRACTICAL DIETETICS. By Dr. W. G. THOMPSON. Second Edition. 8vo, 828 pages. Illustrated. D. Appleton and Company, New York.